

CHILDREN'S HOSPITAL MEDICAL CENTER

Boston, Massachusetts

ANNUAL REPORT 1966





THE CHILDREN'S HOSPITAL MEDICAL CENTER

Comprising

The Children's Hospital Medical Center
Association of the House of the Good Samaritan
Sarah Fuller Foundation for Little Deaf Children
The Sharon Sanatorium
The Hospital and Convalescent Home for Children
Children's Cancer Research Foundation, Inc.
Judge Baker Guidance Center
The Children's Mission to Children

300 Longwood Avenue, Boston, Massachusetts 02115
Telephone: 617-734-6000

Executive Offices: 45 Milk Street, Boston, Massachusetts 02109
Telephone: 617-482-6120

THE CHILDREN'S HOSPITAL MEDICAL CENTER

As of April 1, 1967

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The Architects Collaborative

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Children's Hospital Program

Miss Olive Simard, R.N.





For more than a year, the Hospital has been involved in an intensive fund raising campaign (REACH) which is now coming to a close. Since this was the largest and most extensive public effort in our long history, we may well reflect on its immediate significance and its ultimate effects.

In considering the enormous sum of money which has been raised or is expected, the campaign undoubtedly will be a definite financial success. The vast development program, of which the campaign was a basic cornerstone, is well underway and should be completed as planned. But the campaign has produced one result which may be even more important in the years to come—a vast reservoir of interest and goodwill.

First, we must salute those 1300 Hospital employees who have given sacrificially to this campaign. We warmly acknowledge the over-subscription of our Medical Staff, the large pledge of the Nurses' Alumnae and the support of hundreds of the Medical Alumni. All of this is an inspiring demonstration of loyalty and dedication to this institution.

The most significant long range factor in this campaign, however, may be the effect it has had on the lay men and women who have given, worked, and been exposed to this vital program. At this writing, our 259 Trustees and Corporation Members have pledged in excess of \$4.3 million, a truly remarkable accomplishment. Most of this group, I am sure, have become more interested and more involved in the Hospital. Undoubtedly, many of them will be taking an even more active part in the Hospital in the future than in the past.

The interest of other loyal friends of the Hospital has been rekindled as well. Most significantly, through the combined efforts of all these family members, hundreds of able new workers have been enlisted in all parts of our primary service area. In total, nearly 900 volunteers have been directly engaged in advancing this campaign. Tens of thousands of man-hours, and women-hours, too, were cheerfully given to the Hospital.

All these civic-minded people and activities assure a bright future for Children's. The Hospital's vital volunteer base has been strengthened, volunteer areas have been infused with new vitality and enthusiasm, and future trustee and corporation members have been developed. As important as was the money raised, these people themselves are even more important to the well being of The Children's Hospital Medical Center.



William W. Wolbach
President



REPORT OF THE GENERAL DIRECTOR

Nineteen sixty-six will be remembered as the year that hopes and plans were transformed into reality on two fronts of concern to those caring for sick children. It was the year when the Federal and State governments took major steps to insure that the underprivileged and the indigent receive medical care of high quality. And, it was the year that plans of The Children's Hospital Medical Center were translated into reality to insure that the promised high quality of medical care will continue to be available to all sick children.

On the legislative front, the joint government program popularly referred to as Title XIX will have a profound effect on Children's. In Massachusetts, the program began officially on September 1, 1966, and at the time of this report more than 3,000 children had received treatment under it. Generally, the program provides for the care of individuals under 21 years of age, providing the family resources are below certain fixed income levels. As with all new large programs, there has been a certain degree of administrative chaos at the beginning. Many individuals are unaware of their eligibility for this kind of medical assistance. Neither the hospitals nor the local government authorities were prepared for the added administrative workload, nor were either thoroughly conversant with the policies and procedures necessary for the implementation of such a plan.

Nonetheless, it is clear that for the first time there is a probability that the children of low income families will receive medical care of the same quality as their more affluent neighbors. A by-product of the legislation will hopefully be an improvement in the Hospital's financial condition, brought about by the fact that many of these children previously were treated by the Hospital at little or no charge. Many members of the professional and administrative staff of Children's have been active in assisting the appropriate governmental agencies to iron out the rough spots in the program. They are unanimous in their belief that the program has the potential of strengthening the very real relationships between government and the voluntary health system.

Hospital Occupancy

During 1966, the Hospital was more crowded than ever before in its history. The average occupancy of our beds for the year was 88.6 per cent, which continued a sustained annual rise beginning in 1963. Total admissions for the year were 12,008, with an average stay of 9.2 days. The outpatient clinic shows its inevitable continued rise in number of visits to a current level of 149,098. This repre-

sented an increase in visits of almost 10,000 over the 1965 figure. The extraordinary increase in the emergency rooms continued and serves to emphasize again the changing medical practice patterns in urban areas where physicians have become less and less available. A study of the places of origin of our patients continues to show the regional and international nature of the hospital, as well. Patients came to us for help from 43 of the 50 states as well as from 21 foreign countries.

The long-term effects of high usage of a hospital's facilities are a reduction in the unit cost of care. So far, our operating statement tends to bear this out in that income reflecting higher utilization has outstripped the increased expense load required for maintenance of good patient care.

Development Program Progress

In our report of several years ago, the various phases of the building program were outlined in detail. The first phase involved a series of preliminary moves designed to free up land for hospital buildings. This first phase is complete. It included the building of a parking structure, hyperbaric facility and its associated laboratories, the acquisition of a doctors' office building and some additional staff living quarters, and a very significant amount of remodelling of facilities to be retained.

Phase II, the target of the Hospital's current fund drive, incorporated four major structures and additional endowment as its goal. Two of the structures were begun during 1966 and at this writing are well on their way toward completion. The first of these is an 11-story ambulatory clinic building designed to house 57 general and special clinics. It will be completed during this summer and will significantly relieve the intolerably crowded condition of our present outpatient department. It is, however, much more than a new building; rather it is a visible translation of many new ideas and concepts.

Through its doors will pass more than one-half million persons each year, from infants to grandparents. One-third of these will be patients, while the other two-thirds will be their brothers and sisters, their parents and relations; in short, those who traditionally accompany a child to an outpatient clinic. For all of these, we have provided the facilities they require; places for examination and treatment, for eating, playing, napping, and for waiting. By eliminating the emergency and dispensary function from this building, we can conduct procedures on an appointment basis. This will help us eliminate the long delays and confusion which have characterized outpatient clinics in the past. The latest administrative

procedures incorporated into the system allow optimal use of the facilities while decreasing the impersonality of large organizations. The architectural design and style ensure a degree of privacy and dignity to parent and child alike. And, on the upper three floors, a new kind of care unit has been created; one which will devote itself to the special problems of children who are behind in some facet of their development—be it their physical growth, their social and intellectual development, their ability to learn, or their psychiatric well-being.

Dr. Allen Crocker has been appointed project director for this unit, which will be staffed by a variety of professional people, each focusing his attention on the child who has failed to prosper. Children will be admitted early in the morning, and the staff of the unit will take over responsibility for him until suppertime when he will go home. The cycle will be repeated for as many days as is required to arrive at a solution to the child's problem, providing all the advantages of a hospital admission without any of its economic disadvantages. Furthermore, it will return the child to his own home environment each night. Our belief is that problems which under the present out-patient procedure take up literally months to evaluate, can be solved in a few days and, with the parent, a reasonable and thoughtful course of action can be planned.

Housing Complex

The second major facility, well on its way toward completion, is the patient and staff housing complex now under construction at the corner of Longwood and Brookline Avenues. An apartment tower primarily for nurses and other key staff people will include 158 single and multiple apartments at reasonable rentals, while the house staff will occupy bachelor quarters in a 64-unit section of the complex.

A key element in the complex is an 86-unit motel for patients and their parents. Here, children from a distance may have their medical problem evaluated without the necessity of breaking up the family unit and without incurring the staggering costs of a hospitalization. Conversely, patients in their convalescent phase, still needing daily observation but not sick enough to warrant continued hospitalization, may stay with their parents in the motel until they are ready to return to their homes. The child is re-joined with his family, hospitalization costs are kept down, and hospital beds are made available for sicker children.

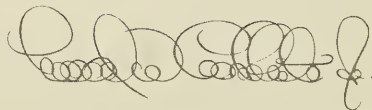
Other facilities in the complex will include a bank, an underground parking area, a swimming club, a restaurant, a day nursery, and meeting rooms. This

significant departure from tradition will be ready for use in 1968.

Planning on the Pediatrics Sciences Building which represents the Hospital's greatest commitment ever to research, was completed in 1966, and this third element in the building program will commence during the summer of 1967.

The final structure in Phase II of the development program is now in its very active planning stage and will include all the requisite facilities for bed care and clinical laboratories which the hospital will require over the next decade.

As the pieces fall together, the momentum of the program is apparent. Five years of planning begin to take physical shape. Cranes and concrete trucks contribute to existing traffic problems. The noise of pile drivers and the shouts of construction workers filter into patient areas and laboratories. But these are 20th Century signs of progress, and are harbingers of exciting advances to come. They are the solid indications that Children's refuses to stand still. They are the Hospital's pledge to children everywhere that life need not be limited to but a few short years because of an unconquered disease, or to endless years of distress and incompleteness because of medical science's inability to help. The concrete trucks and pile drivers and construction workers give voice to our promise that Children's and its people remain dedicated to providing still better care for sick children.



Leonard W. Cronkhite, Jr., M.D.
General Director



REPORT OF THE CHAIRMAN OF THE STAFF

The staff of The Children's Hospital Medical Center expresses its great pleasure in the visible evidences of the implementation of plans and hopes which lay dormant for so many years. Mr. William W. Wolbach, President of the Hospital, and Dr. Leonard Cronkhite, General Director, have been responsible for enormous administrative and fiscal improvements which were so badly needed before a greatly enlarged undertaking could be justified. The staff salutes also the Trustees and a newcomer to their rank, Mr. Paul Hellmuth, who has undertaken the largest and most intensive fund raising campaign in our history. His leadership based upon complete dedication to his task and belief in the importance of the goals of the Hospital has inspired the entire staff, the Hospital employees, the Alumni, as well as the Trustees and the community and all those who are interested in the welfare of children. The Chairman appointed Dr. William Berenberg to represent the staff in this campaign. His contribution has been a record-breaking one resulting in the oversubscription by the medical staff of the quota assigned to it, in addition to invaluable assistance in the Community effort.

The present expansion in facilities is based upon the original plan for the expansion of the Children's Hospital into the Children's Medical Center at the end of World War II. These new facilities, however, in the Ambulatory Services Building, and the Clinical Services Building still to be erected, have made possible extension of original hopes and addition of new conceptions which would have had very low priority 20 years ago. There has been imaginative thinking in the administrative structure, which has grown so rapidly during the past five years. The staff applauds the concern of the Trustees and Administration for the solution of problems of living not only of the house staff but also of so many other people of importance to the life of the Hospital. The motel should ease greatly the burden imposed upon families by the illness of a child and provide civilized living arrangements for the family as well as the recuperating child during a period of great strain.

It is already clear that the new Ambulatory Service Building, which is nearing completion, and the new Clinical Services Building, which will add badly needed facilities and beds as well as relief for the overcrowded supporting laboratories and services, will not meet all the needs of a great children's medical center. Solution for some needs will be found by cooperation with the Affiliated Hospitals to be erected on the site of the Peter Bent Brigham Hospital in line with a belief, to which I have long been committed, that all planning in the field of medicine should take into consideration community needs and availability of expensive and specialized facilities in other institutions. All planning of institutions associated with Harvard Medical School should be coordinated through the School to give real meaning to

the term Harvard Medicine. Decentralization of some of our medical activities, based upon close attention to the needs of the community, will multiply by many times the utilization of the full talents of our staff and facilities and lessen the need for piling up too many bricks on one small section of land.

The Greatest Challenge

The new Dean of Harvard Medical School, Dr. Robert Ebert, has stated that he believes the greatest challenge for Harvard Medical School lies in the development of social responsibilities of medicine, and he has stressed the necessity for the establishment of new patterns of patient care including new relations between hospitals and the community they service, more efficient use of existing medical resources, as well as the development of radically different approaches to caring for the health needs of the population. This calls for knowledge and skills beyond medicine, fortunately found in the fields of economics, sociology, and behavioural sciences.

The thinking of the staff and administration of the Children's Hospital has been proceeding steadily along these lines for many years, and we welcome the acknowledgment of this great challenge by the Harvard Medical School itself and look forward to development of all the institutions under the Harvard banner and to the magnitude of our own contribution toward this goal. The very progress we are now making in the physical realization of our long-time dreams and plans makes it mandatory for the staff to continue to work actively and constructively with long range objectives as well as immediate accomplishments as our goal. The Chiefs of Staff working with the joint Planning Committee, appointed by the Trustees—The President, The General Director, and The Chairman of the Staff—have greater responsibility than before.

The building to house research in the field of mental retardation will be begun in July, 1967. We hope that federal assistance for additional floors to meet the research needs of all other members of the staff will be obtained in time to permit the entire structure to be built at the same time. The Chiefs of Staff have agreed that a new organizational plan will be put into effect in the new research building. No assignments will be made on the basis of departments. The entire building will be governed by the philosophy of those who are either full-time professional scientists or who are doctors especially trained in science who can devote their major efforts to research.

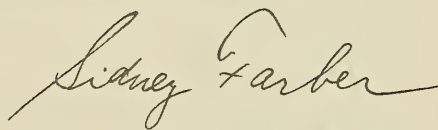
The several disciplines of science basic to medicine will be headed by leaders in their fields with ample opportunity for members of the clinical staff of the Hospital to work with experts in such time as can be spared from care of the patient or teaching. The Chairman has insisted on this arrangement so

that professional expertness will guarantee the caliber of the research in an arrangement which will eliminate unnecessary and wasteful duplication of expensive equipment. There will be a Director for Research, or a Scientific Director who will have primary responsibility for the success of this magnificent opportunity and he will be assisted by an outside advisory board and a committee of the investigators working closely with the Chiefs of Staff of the Hospital.

Tenure Posts Created

The Trustees accepted the Chairman's recommendation that three tenure posts for professional scientists be appointed for the lower floors in the neurosciences in the portion of the building devoted to mental retardation. This is the hospital's guarantee that the quality of research will be at the highest level since these scientists will be selected by Harvard University with the usual participation in decision-making by the Hospital. If the upper floors for research in the many fields of interest represented in the Hospital can be built at the same time, there will be additional strength to be furnished by or through the Hospital. A James Gamble Professor of Research Pediatrics is being sought now, and he will be either an M.D. or Ph.D. The Trustees have added another professorship in surgery to enable Dr. Robert E. Gross to put his entire energy into his Directorship of the Cardiovascular Center for Children during the remaining years of his tenure. Harvard has not yet processed the recommendation of the Ad hoc Committee appointed by President Nathan Pusey, but it seems certain that a brilliant young surgeon will be selected on the basis of his extraordinary talents as a surgeon, a scientist and a teacher. A third action on the part of the Hospital and the School which will affect this research building, as well as the Hospital, will be the appointment of a successor to Dr. William T. Green, who retires June 30, 1968, as head of Orthopedic Surgery. Dr. Green has continued the great tradition of clinical leadership in orthopedic surgery. We are determined that this tradition will be maintained and that clinical supremacy in pediatric orthopedic surgery will characterize our work. The time has come, however, with the provision of physical resources for research impressive enough to match the financial resources already on hand in that Department, for the appointment of a man who will in addition, either inspire or conduct a research program of orthopedic surgery in the modern idiom. This is one of the great deficit areas in medicine. It will be remembered by some, that Dr. Green's predecessor, Dr. Frank R. Ober, left his entire estate for research in orthopedic surgery. The Chairman recalls with deep feeling the many long discussions with Dr. Ober more than 25 years ago which led to this magnificent gift to the Children's Hospital.

A final action of the Hospital Trustees which will enrich this new research building results from a not yet announced gift by a Trustee of the creation of one more full professorship. The research building then will have leadership from at least seven tenure professors, or associate professors provided through the Hospital to Harvard Medical School, in addition to an associate professorship recently created through Hospital efforts for Dr. Park Gerald in the field of Genetics. This is a mighty oak which has grown from the small planting made 20 years ago when the Division of Laboratories and Research was created. The yield from that action in 1946 has been enormous if we mention only the Laboratories of Infectious Disease Research under Dr. John Enders. The plans for the expansion of this Division into an Institute of Pediatric Research were held back at that time not only by lack of resources, which would have been obtained, but also by the fact that thinking was not yet mature enough in the staff to accept the possibility that such a professional research institute could be achieved without interfering with the accumulation of resources to build new hospital facilities, operating rooms, and wards which were so badly needed. The philosophy of the Institute of Pediatric Research was transferred immediately to the Children's Cancer Research Foundation which had a specific goal in the field of cancer of children. There this philosophy has been put to the test for 20 years and has achieved its purpose. The future is indeed bright for all who are concerned with having The Children's Hospital Medical Center make its greatest possible contribution to the welfare of children.



Sidney Farber, M.D.
Chairman of the Staff





REPORT OF THE TREASURER

During the year 1966, The Children's Hospital Medical Center obtained legislation increasing its capital funds to \$80,000,000. This was a necessary step to accommodate funds acquired by merger with the Hospital and Convalescent Home for Children and a gift for building purposes from the Trustees under the will of Fannie Hall Fegan, and the REACH Campaign.

The REACH Campaign, which has made a vigorous and extremely promising start, is expected to provide the principal support for a major plant expansion program aggregating approximately \$14,620,000, of which \$5,540,000 has been expended through September 30, 1966. The additional funds are expected from the U. S. Government and from commercial borrowings for which mortgage commitments aggregating \$8,125,000 have been obtained at September 30, 1966. Patient revenue rose to a new high of \$9,840,000—an increase of 13 per cent or \$1,163,000 over the previous year. However, the increased revenue was offset by payroll increases (including Social Security) and higher costs of supplies and additions to personnel. The resulting loss before depreciation and the cost of free care was \$907,000 compared to \$755,000 in the previous year. Adding to this loss the cost of free care

(\$1,560,000) and after crediting income from investments, allotments from Affiliates and United Community Services, the resulting deficit, before depreciation, was \$1,189,000 as against \$769,000 the previous year. It is expected that as legislation initiated by the Federal Government is implemented by the Commonwealth of Massachusetts the gap between the cost of free care and reimbursement for services will diminish.

During the years ahead, The Children's Hospital Medical Center will continue to face the problem of a constantly rising economy and also its responsibility to provide the best of medical facilities for children. Every effort is being made to manage the financial programs in a manner that will meet the challenge with emphasis on the maximum return from funds within our control.

A comparative summary of operations is found elsewhere in this report.

F. Murray Forbes, Jr.
Treasurer

THE CHILDREN'S HOSPITAL MEDICAL CENTER STATEMENT OF INCOME

for the Years Ended September 30, 1966 and 1965

	1966		1965
During the period we billed patients for:			
<i>Inpatient care</i>	\$ 4,242,585		\$ 3,727,393
<i>Ancillary services</i>	4,667,175		4,142,159
<i>Outpatient clinic fees</i>	930,592	\$ 9,840,352	808,060
			\$ 8,677,612
We spent or incurred for:			
<i>Patient care—salaries</i>	\$ 7,661,868		\$ 6,717,024
<i>Patient care—expenses</i>	4,246,709		3,720,903
<i>Employees' Retirement Plan (Note 4)</i>	159,938	\$12,068,515	157,110
			\$10,595,037
<i>Research and education—salaries and expenses</i>	\$ 3,846,409		\$ 3,443,571
<i>Supported by grant income of</i>	(3,846,409)	—	(3,443,571)
			—
<i>Less revenue received for—</i>			
<i>General services, dietary, School of Nursing, etc.</i>	\$ 985,195		\$ 934,680
<i>Overhead from grants</i>	336,332	1,321,527	228,071
			1,162,751
		\$10,746,988	\$ 9,432,286
Resulting operating loss before free care and rate adjustments was		\$ (906,636)	\$ (754,674)
Because of contractual arrangements and patients' inability to pay, we issued:			
<i>Rate adjustments to Blue Cross, net of prior year credits of \$82,826 in 1966 and \$220,779 in 1965</i>	\$ (79,931)		\$ (110,680)
<i>Rate adjustments to welfare agencies</i>	596,123		528,853
<i>Free care allowances to patients</i>	833,017		705,661
<i>Account write-offs, net of recoveries</i>	211,185	1,560,394	176,556
			1,300,390
Since patient revenue did not equal expense and free care cost, the operating loss was		\$ (2,467,030)	\$ (2,055,064)
This loss was partially defrayed by income from:			
<i>Investments and trust funds</i>	\$ 859,998		\$ 884,459
<i>Allotments from affiliates</i>	271,912		257,053
<i>United Community Services</i>	118,168		107,416
<i>Contributions for patient care</i>	27,484	1,277,562	37,581
			1,286,509
Loss before depreciation		\$ (1,189,468)	\$ (768,555)
Depreciation:			
<i>Buildings</i>	\$ 427,071		\$ 351,600
<i>Equipment</i>	180,730	607,801	176,659
			528,259
Net loss for the year charged to General Fund		\$ (1,797,269)	\$ (1,296,814)

The accompanying notes are an integral part of these financial statements.

REPORT OF THE CERTIFIED PUBLIC ACCOUNTANTS

Arthur Andersen & Co.
294 Washington Street
Boston, Massachusetts 02108

To the Board of Trustees, The Children's Hospital Medical Center:

We have examined the balance sheet of THE CHILDREN'S HOSPITAL MEDICAL CENTER (a charitable corporation organized in Massachusetts) as of September 30, 1966, and the related statements of income and fund balances for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. We have previously examined and reported on the financial statements for the preceding year.

In our opinion, the accompanying financial statements present fairly the financial position of The Children's Hospital Medical Center as of September 30, 1966, and the results of its operations and changes in fund balances for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

December 21, 1966, Boston, Massachusetts

Arthur Andersen & Co.

THE CHILDREN'S HOSPITAL MEDICAL CENTER BALANCE SHEET

September 30, 1966 and 1965

ASSETS

	1966	1965
Cash	\$ 957,583	\$ 1,291,409
Accounts receivable:		
<i>Patients, less allowances of \$259,357 for doubtful accounts</i>	2,460,470	2,375,468
<i>Affiliated organizations and other</i>	418,724	310,922
Inventories, at cost (first-in, first-out)	166,160	136,494
Prepaid expenses and deferred charge	170,089	186,125
Cash surrender value of life insurance and annuity policies	262,663	244,663
Investments, at quoted market (Note 1)	26,109,957	27,847,388
Special investments held for others, at quoted market (Note 1)	69,629	83,716
Hospital property and equipment, net (Notes 2 and 3)	13,683,906	12,694,918
Construction in progress (Notes 2 and 3)	2,119,333	684,195
Due from other funds	5,101,459	5,126,299
	<u>\$51,519,973</u>	<u>\$50,981,597</u>

LIABILITIES AND FUND CAPITAL

Current Liabilities:		
<i>Accounts payable</i>	\$ 377,676	\$ 310,242
<i>Accrued expenses</i>	148,946	150,832
Mortgage notes payable	1,543,396	1,516,333
Reserve for insurance and annuities	262,663	244,663
Reserve for Employees' Retirement Plan (Note 4)	453,742	308,151
Due to other funds	5,101,459	5,126,299
Funds held for others	171,759	197,597
Special purpose funds:		
<i>Hospital</i>	916,180	1,154,657
<i>Treasurer's office</i>	170,542	75,228
Fund capital balances	42,373,610	41,897,595
	<u>\$51,519,973</u>	<u>\$50,981,597</u>

The accompanying notes are an integral part of these financial statements.

STATEMENT OF FUND BALANCES

for the Year Ended September 30, 1966

Balance at September 30, 1965	\$41,897,595
Additions or (Deductions):	
<i>Net income (loss) for the year</i>	(1,797,269)
<i>Restricted Endowment Fund Income</i>	109,085
<i>Gifts and bequests</i>	1,074,048
<i>Contributions to the New Development Fund Drive</i>	4,213,822
<i>Expenses of the New Development Fund Drive</i>	(206,069)
<i>Decline in market value of investments for the year</i>	(2,906,286)
<i>Miscellaneous</i>	(11,316)
Balance at September 30, 1966	<u>\$42,373,610</u>

The accompanying notes are an integral part of these financial statements.

THE CHILDREN'S HOSPITAL MEDICAL CENTER

NOTES TO FINANCIAL STATEMENTS

September 30, 1966

(1) Investments

Effective as of the close of its fiscal year, September 30, 1965, the Center adopted the policy of carrying pooled investments at market. The market value of the investments was allocated to the various funds based on the book balances in the respective fund accounts at September 30, 1965, after giving recognition to the periods the respective funds had participated in the pooled investment account.

Investment balances by class of security at September 30, 1966, and related income for the year then ended are as follows:

	Market Value	1966 Income
Bonds	\$ 8,527,165	\$362,513
Preferred stocks	167,765	11,068
Common stocks	17,415,027	558,858
	<u>\$26,109,957</u>	<u>\$932,439</u>
Special investments held for others	69,629	3,335
	<u>\$26,179,586</u>	<u>\$935,774</u>

(2) Hospital Property and Equipment

Hospital property and equipment is stated at cost. A summary of the changes in property, equipment and construction in progress accounts for the year ended September 30, 1966, is set forth below:

	Beginning Balance	Net Additions	Completed Projects Capitalized	Ending Balance
Land	\$ 554,190	\$ —	\$ —	\$ 554,190
Buildings and improvements	15,697,675	63,337	1,249,444	17,010,456
Equipment	2,833,133	249,926	33,120	3,116,179
	<u>\$19,084,998</u>	<u>\$ 313,263</u>	<u>\$ 1,282,564</u>	<u>\$20,680,825</u>
Allowances for depreciation	6,390,080	606,839	—	6,996,919
	<u>\$12,694,918</u>	<u>\$ (293,576)</u>	<u>\$ 1,282,564</u>	<u>\$13,683,906</u>
Construction in progress	\$ 684,195	\$ 2,717,702	\$ (1,282,564)	\$ 2,119,333

(3) Plant Expansion Program

In connection with its major plant expansion program, the Center has entered into construction commitments aggregating approximately \$14,620,000 of which \$5,540,000 has been expended through September 30, 1966. The Center expects to finance this program with proceeds from the New Development Fund Drive, assistance from the United States Government and from commercial borrowings for which mortgage commitments aggregating \$8,125,000 have been obtained through September 30, 1966.

(4) Employees Retirement Plan

The Center has a noncontributory retirement plan for all qualified employees with two or more years of service who have attained 30 years of age. The estimated annual cost of the plan, on the basis of present employment and salary levels, is approximately \$176,000, including \$70,000 for the amortization of past service costs which are being funded over a 25 year period. The estimated unfunded past service liability at September 30, 1966, was approximately \$953,000.

(5) Mergers of Affiliated Organizations

During fiscal year 1966, the Hospital and Convalescent Home for Children, an affiliate of the Center, petitioned the Commonwealth of Massachusetts and received permission to dissolve and to assign and transfer its funds, with certain restrictions, to the Center. As of September 30, 1966, no assignment or transfer of these funds has been made to the Center.

Subsequent to September 30, 1966, the Board of Managers of the Association of the House of the Good Samaritan, an affiliated organization, authorized its officers to take all action necessary or advisable, including the filing of legislation, to enable the Association to merge with the Center. It is the intention of the officers of the Center and the Association to complete this merger during fiscal year 1967.

STATISTICAL SUMMARY

	Admissions		Patient Days		Increase		Percentage of Occupancy	
	1966	1965	1966	1965	Days	%	1966	1965
Inpatient								
<i>Total Hospital</i> <i>(343 beds)</i>	12,008	11,107	110,867	105,945	4,922	4.6	88.6	84.6
Outpatient			1966	1965				
<i>Clinic Visits</i> <i>(including psychiatry services)</i>			149,098	139,828				
Special Services								
<i>Operations</i>			7,297	6,790				
<i>Laboratory tests</i>			245,795	212,803				
<i>Electroencephalograms</i>			4,135	4,151				
<i>Electrocardiology examinations</i>			5,173	4,386				
<i>X-ray films</i>			135,774	122,535				
<i>X-ray therapy treatments</i>			5,016	3,971				
<i>Physical therapy treatments</i>			36,080	34,664				
<i>Respiratory therapy services</i>			103,044	73,053				

IMPORTANT TRENDS IN RECENT YEARS

Year	Total Patient Days	Percent of Occupancy	Cost Per Patient Day	Cost of Free Care
1966	110,867	88.6	\$73.00	\$1,015,000
1965	105,945	84.6	66.26	882,000
1964	102,738	81.8	59.06	699,000
1963	95,436	76.2	57.15	625,000
1962	92,840	74.2	54.03	576,000
1961	88,329	70.6	50.10	360,000
1960	93,024	74.1	43.03	413,000
1959	91,599	73.2	43.39	440,000
1958	90,161	72.0	40.74	238,000
1957	96,275	76.9	38.89	147,000
1956	103,351	82.3	32.94	193,000
1955	103,537	82.7	29.81	279,000
1954	104,633	83.6	28.93	235,000



THIS IS THE CHILDREN'S HOSPITAL MEDICAL CENTER OF 1970

This is The Children's Hospital Medical Center of 1970; the face of Children's as it steps boldly into the second century of service to the young people of the world. The new skyline of the medical center dramatically illustrates changes that are taking place in the world of pediatric medicine; the intense desire to provide care in surroundings which complement the efforts of the doctors, nurses and other health personnel; the dire need for basic research laboratories in which to seek solutions to the many illnesses still threatening children; the demands, both social and professional, which are being made upon child care centers.

In Children's of 1970, the new buildings dwarf the old, and only Building A remains readily identifiable as the Children's Hospital of 1920. Those buildings which for so many years have served so well the medical center now seem reduced in size. But these reminders of the heritage of Children's persist as vital portions of the whole; and, as facilities in which important work is being done, they will continue their contribution.

Although the face is changed, the character of Children's is not. The dedications of those within the buildings — new and old — are the same as in the past: patient care, research, teaching. A strong awareness of the hospital's responsibility to society continues, as does the never-ending effort to retain that warmth and intimacy which has been traditional at Children's Hospital.

The new buildings are the shells for programs and concepts. Necessary though they are, they remain only the houses in which the workers toil. For the Development Program at Children's is one of ideas and plans for action. It is not a building program, but a program which, through new buildings, permits Children's to continue meeting the challenges presented.

Thus equipped, Children's of 1970 faces its second hundred years, confident that the road ahead, upward as it is, leads to new heights in caring for sick children.

- 1 Farley Building
- 2 Clinics and Diagnostic Building (Outpatients)
- 3 Medical Services Building
- 4 Building "A"
- 5 Basic Pediatric Sciences Building
- 6 Patient-Staff Accommodations Complex



CHAIRMAN'S REPORT

The Women's Committee has a total membership—Active and Contributing—of 396. Ninety-six per cent of its Active members are engaged in projects related to the Hospital. During fiscal '65-'66 our total receipts were \$54,318.08, an increase of \$2,308.75 over the previous year. Voteable funds are \$45,922.99—\$1,246.86 more than last year. The reports of the 19 sub-committees indicate the Women's Committee is an efficient service organization, the work accomplished as gratifying as the tradition which inspires it.

As women in a position to be better informed with correct facts it is our obligation to understand and evaluate measures as they affect the Children's Hospital. We all know there is a nursing shortage but not the reasons why, nor do we necessarily understand the differences existing among the four types of nursing education available to young women. A second obligation for the Women's Committee is to give more support to the CH School of Nursing, the only pediatric nursing school in the country. We should make more scholarship funds available to deserving students, give outright financial support when needed, and continue loans to nurses who wish this kind of assistance. Certainly we are familiar with the CH REACH Development Program and our commitment of \$150,000.00 over a five year period restricted to a new operating suite with closed T.V. circuit for teaching. This year we exceeded our annual payment by \$6,572.99. Auxiliaries of any hospital today are seeking answers to some of the above questions in addition to maintaining their income producing projects such as Lunch Shop, Gift Shop and Thrift Shops. The Massachusetts Hospital Assembly, the New England Hospital Assembly and the American Hospital Association through their annual and regional programs are attempting to explain measures which affect the hospitals of the nation. I hope more of our membership will attend these meetings in the future.

The Children's Hospital is a very friendly place for parents as well as children. It is an institution where the combined efforts of staff, administration, Women's Committee, volunteers and employees are directed toward better child care and parent understanding. Entering the "old" building at 300 Longwood Avenue under the graceful curving staircase and looking into the oval shaped stairwell outlined with delicate ironwork, many thoughts come to mind. The mingling of the old and new architecture, the magnitude of today's hospital administration, and the

international reputation of many CH staff members who have pioneered in pediatric surgery and medicine. Most important, it is the children I remember—two little boys in the doorway of a ward, eyes on the clock at visiting time saying to each other: "Let's give her three more minutes then run up and down the hall and make a lot of noise!" She came and bravado was washed away by tears. The child waiting patiently in Admissions: "Mommy, what is that lady in a pink smock doing finger painting all over the walls?" She was Mrs. Laurence Flint, the artist who transformed Mother Goose rhymes and scenes from Old Boston into exquisite murals for the enjoyment of all who pass. The young girl from Iceland who was shown she could breathe sitting up in bed through the kindness of her pediatrician. Most poignant of all, the lad who could only raise himself as high as the length of a good arm from his paralyzed body. Looking out of the window where today a mammoth structure would block his view he said, "Lady, have you ever seen the sun shining through the wings of a dragonfly?"

We are living in an age that is computered far faster than the flash of human intelligence, one in which the work of generations can be recorded in a matter of minutes by relatively few individuals. While the basic scientists try to figure how a complicated chemical process called photosynthesis that takes place in a green plant might nourish their space travelers of tomorrow and at the same time give them oxygen to breathe in their spaceships; we find a continued and almost greater yearning for human kindness and understanding on earth, a necessity for an extra pair of hands when automation breaks down, and in any children's hospital the need for unspoken support to troubled parents. These are simple things that women can still do. The new Chairman, Mrs. Howard F. Gillette, will have the exciting experience of guiding The Women's Committee through the next three years of more change. I wish to express my appreciation to all members of the CHMC Family who have helped me the past three years—and offer a special blue ribbon to our Administrative Secretary and friend, Mrs. Olga Cruz, for work beyond the call of duty.

Respectfully submitted,



Mrs. Kenneth W. Warren,
Chairman



WOMEN'S COMMITTEE FINANCIAL SUMMARY 1965-1966

Mrs. Howard F. Gillette, *Chairman*

Cash on Deposit, September 30, 1965	\$ 47,676.13
Transactions (Per Summary of Cash Reports for Fiscal Year Ending Sept. 30, 1966)	
Add: Receipts	54,318.08
	\$101,994.21
Less: Disbursements	53,071.22
Cash on Deposit, September 30, 1966	\$ 48,922.99
Less: Cash Balance required for Monthly Expenses	3,000.00
Available Funds to be voted for 1966-1967	\$ 45,922.29

Distribution of Funds 1966-1967

Committed:

Women's Committee Proceeds to CHMC REACH Development Program	\$ 23,940.96
Yankee Bookstall Proceeds to CHMC REACH Development Program	9,304.03
Daffodil Fair Proceeds to CHMC REACH Development Program	3,328.00
Cohasset Tennis Tournament Proceeds to Nurses Loan Fund	1,300.00
	\$ 37,872.99

Committee Operation Expense Items:

Staff Wives	\$ 1,300.00
Teas and Entertainment	1,000.00
Flower Fund	400.00
Library Committee	350.00
Discretionary	300.00
Photography Committee	200.00
Knitting Committee	100.00
	\$ 3,650.00

Contribution Items:

Scholarship for Nurses	\$ 2,500.00
Rotating Loan Fund for Nurses	1,500.00
Tickets for Student Nurses	350.00
Bowling Prize — CHMC Employees	50.00
	\$ 4,400.00

November 15, 1966 Total Voted	\$ 45,922.29
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Women's Committee Chairmen

Christmas Window Painting —

Mrs. George H. Sweetnam, *Chairman*

Decoration — Mrs. Kirke A. Neal, *Chairman*

Friends of CHMC — Mrs. Charles F. Hovey, *Chairman*

The Gift Shop — Mrs. H. Raymond Wilkinson,
Chairman

Girl Scouts — Mrs. George A. Clapp, *Chairman*

Holiday — Mrs. L. Harrison Thayer II, *Chairman*

Knitting — Mrs. Francis A. Harding, *Chairman*

Library — Mrs. Richard A. Knight, *General Chairman*
and *Chairman of The Patients' Library*
Mrs. Earle O. Latham,

Chairman House of Good Samaritan Library

The Lunch Shop — Mrs. Samuel S. Stevens, *Chairman*

Membership and Nominating —

Mrs. David Wilder, *Chairman*

Nurses Teas — Mrs. John M. Alden, *Chairman*

Parents' Coffees — Mrs. Sidney H. Wirt, *Chairman*

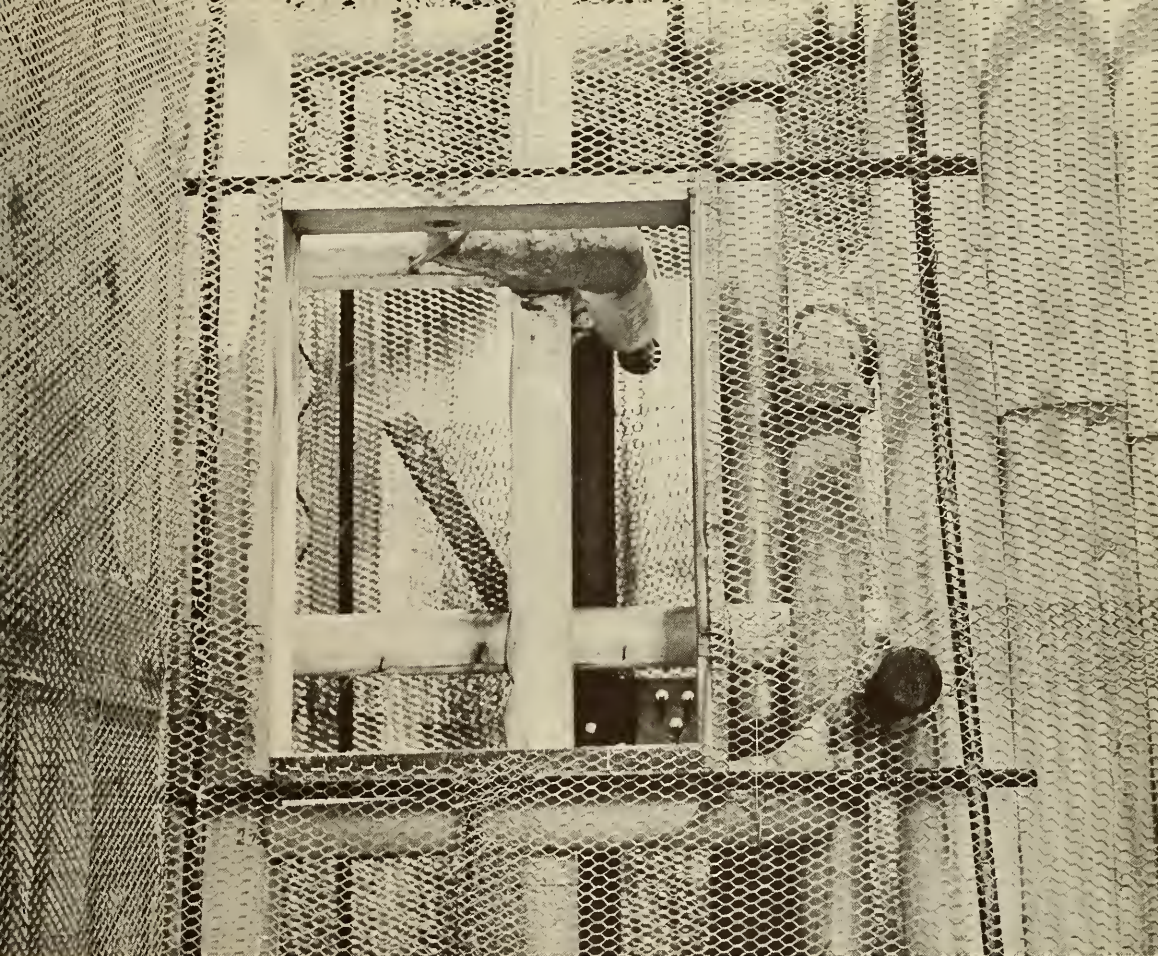
Photography — Mrs. Albert A. Hittel, *Chairman*

Public Relations — Mrs. Robert M. P. Kennard,
Chairman

Staff Wives — Mrs. John F. Grigler, Jr., *Chairman*

Surgical Dressings — Mrs. Joel M. Barnes, *Chairman*

The Thrift Shop — Mrs. Stephen Little, *Chairman*



1965-1966

Chairman Mrs. Kenneth W. Warren
Vice Chairmen . . . Mrs. Theodore C. Haffenreffer, Jr.
 Mrs. Phillip C. Thibodeau
Recording Secretary . . . Mrs. Stephen Little
Corresponding Secretary . Mrs. Oldfield B. B. Rapalyea
Treasurer Mrs. Howard F. Gillette
Executive Committee —

For Three Years: Mrs. William R. Driver, Jr.
 Mrs. James E. Drorbaugh
 Mrs. Harrison L. Thayer II

For Two Years: Mrs. Roswell M. Boutwell III
 Mrs. Eugene H. Clapp II
 Mrs. James G. Wheeler

For One Year: Mrs. John M. Alden
 Mrs. Charles W. Bartlett
 Mrs. Alexander S. Nadas

Members Ex-officio:
Past Chairman Mrs. David Wilder
Friends of C H M C . . . Mrs. Charles F. Hovey
Nominating Committee . . . Mrs. David Wilder
Staff Wives Mrs. John F. Crigler, Jr.
Volunteer Service Mrs. Roger A. Perry

1966-1967

Chairman Mrs. Howard F. Gillette
Vice Chairmen Mrs. Stephen Little
 Mrs. James G. Wheeler
Recording Secretary . . . Mrs. William Kendall Russell
Corresponding Secretary . Mrs. William R. Driver, Jr.
Treasurer Mrs. Arthur H. Nelson
Executive Committee —

For Three Years: Mrs. Albert A. Hittel
 Mrs. Morton F. Spears
 Mrs. Robert Sullivan

For Two Years: Mrs. John F. Crigler, Jr.
 Mrs. James E. Drorbaugh
 Mrs. L. Harrison Thayer II

For One Year: Mrs. Eugene H. Clapp II
 Mrs. Dean Crocker
 Mrs. Earle O. Latham

Members Ex-officio:
Past Chairman Mrs. Kenneth W. Warren
Friends of C H M C . . . Mrs. Kenneth W. Warren
Nominating Committee . . . Mrs. David Wilder
Staff Wives Mrs. William D. Winter, Jr.
Volunteer Service Mrs. Roger A. Perry

SOURCE OF CHILDREN'S HOSPITAL PATIENTS by Place of Residence

Massachusetts	25,470
Boston	10,448
Elsewhere in Massachusetts	
Barnstable County	171
Berkshire County	134
Bristol County	680
Dukes County	4
Essex County	1,556
Franklin County	69
Hampden County	344
Hampshire County	129
Middlesex County	5,081
Nantucket County	18
Norfolk County	3,147
Plymouth County	1,143
Suffolk County	758
Worcester County	657
Other New England States	1,770
Connecticut	423
Maine	347
New Hampshire	510
Rhode Island	394
Vermont	96
<i>(Excluding an estimated 21,500 outpatients making repeat visits.)</i>	
<i>For the year ended September 30, 1966</i>	
Elsewhere in the United States	638
Alabama	2
Alaska	3
Arizona	7
Arkansas	2
California	25
Washington, D.C.	9
Florida	37
Georgia	10
Idaho	1
Illinois	9
Indiana	11
Iowa	4
Kansas	2
Kentucky	4
Louisiana	1
Maryland	18
Michigan	10
Minnesota	1
Mississippi	2
Missouri	5
Montana	2
Nebraska	1
New Jersey	62
New Mexico	2
New York	294
North Carolina	10
Ohio	17
Oregon	2
Pennsylvania	25
Puerto Rico	4
South Carolina	10
Tennessee	5
Texas	3
Virginia	20
Washington	3
West Virginia	4
Wisconsin	10
Wyoming	1
Elsewhere in the World	170
Grand Total	28,048



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Hon. Francis X. Morrissey
Major Nicholas P. Morrissey
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Mrs. Samuel H. Wolcott, Jr.
Richard M. Wyman

THE CHILDREN'S HOSPITAL MEDICAL CENTER STAFF LISTING

DEPARTMENT OF MEDICINE

Physician-in-Chief

Charles A. Janeway, M.D.

Associate Physician-in-Chief

Louis K. Diamond, M.D.

Assistant to the Physician-in-Chief

Sherwin V. Kevy, M.D.

Chiefs of General Medical Divisions

Child Health Division

Joel J. Alpert, M.D.

Medical Out-Patient Department

Cathleen C. O'Brien, M.D. (Acting)

Adolescents' Unit

J. Roswell Gallagher, M.D.

Infants' and Children's Medical Division

William Berenberg, M.D.

Newborn Division

Samuel L. Katz, M.D.

Senior Associates in Medicine

William Berenberg, M.D.

T. Berry Brazelton, M.D.

William D. Cochran, M.D.

Allen C. Crocker, M.D.

John F. Crigler, Jr., M.D.

Louis K. Diamond, M.D.

James E. Drorbaugh, M.D.

Edward C. Dyer, M.D.

R. Cannon Eley, M.D.

Francis X. Fellers, M.D.

J. Roswell Gallagher, M.D.

Park S. Gerald, M.D.

Thomas C. Hall, M.D.

Sprague W. Hazard, M.D.

Samuel L. Katz, M.D.

Alexander S. Nadas, M.D.

William I. Neikirk, M.D. (to 10/31/66)

David D. Rutstein, M.D.

Harry Shwachman, M.D.

Clement A. Smith M.D.

William D. Winter, M.D.

Associates in Medicine

Thomas W. Adams, M.D.

Olga E. Allers, M.D.

Joel J. Alpert, M.D.

Robert B. Berg, M.D.

John K. Brines, M.D.

Leonard W. Cronkhite, Jr., M.D.

Karel deHaas, M.D.

William R. Dorsey, M.D.

Albert A. Frank, M.D.

Clementina Geiser, M.D.

Robert D. Griesemer, M.D.

(Dermatology)

John P. Hubbell, Jr., M.D.

George Kahn, M.D.

Sherwin V. Kevy, M.D.

Kon Taik Khaw, M.D.

Alexander S. MacDonald, M.D.

Anna Mitus, L.R.C.P.

Otto S. Nau, M.D.

David G. Nathan, M.D.

Nicholas M. Nelson, M.D.

Julian Pearlman, M.D.

William Pfeffer, Jr., M.D.

Gertrud C. Reyersbach, M.D.

Oliver F. Roddey, Jr., M.D.

Fred S. Rosen, M.D.

Edward Manning Sears, M.D.

Irving Silverman, M.D.

Gerald B. Shattuck, M.D.

David H. Smith, M.D.

John W. G. Tuthill, M.D.

Mary Ellen Beck Wohl, M.D.

Assistants in Medicine

Glenna L. McD. Birmingham, M.D.

Euan T. Blanch, M.D.

Albert Cohen, M.D.

Kelley K. Davis, M.D.

William A. Dickson, M.D.

Thomas F. Dolan, Jr., M.D.

Paul F. Donahue, M.D.

Ralph Earle, Jr., M.D.

Stephen M. Frawley, M.D.

Harold J. Freedman, M.D.

George M. Gill, M.D. (Tumor Therapy)

Elizabeth A. Gregory, M.D.

Margaret C. Heagarty, M.D.

Richard A. Katz, M.D.

Joseph L. Kennedy, Jr., M.D. (to 1/1/67)

Charles S. Keuper, M.D. (Dermatology)

Howard S. King, M.D.

Martin L. Klemperer, M.D.

Leon E. Kruger, M.D.

Lillian A. Francis McMackin, M.D.

H. Lester Medlinsky, M.D.

Thomas J. Moore, M.D.

Myron Morris, M.D.

Donald M. Muirhead, Jr., M.D.

Alice Nauen, M.D.

Cathleen C. O'Brien, M.D.

Alexander L. O'Hanley, M.D.

Robert J. Orme, M.D.

Joseph Osborne, M.D.

Thomas C. Peebles, M.D.

Veronica S. Petersen, M.D.

Howard J. Potter, M.D.

Henry M. Putnam, M.D.

Julius Rako, M.D.

Daniel R. Rectanus, M.D.

George L. Robb, M.D.

Murray K. Rosenthal, M.D.

Herbert L. Ruben, M.D.

Robert T. Seecery, M.D.

George L. Siegel, M.D.

Leslie Silverstone, M.D.

Allen B. Stimson, M.D.

George Storm, M.D.

George H. Taft, M.D.

John Taub, M.D.

Irving Umansky, M.D.

Willem Van Pelt, M.D.

Richard H. Watson, M.D.

Harold J. Wheeler, M.D.

Martin Keister White, M.D.

Research Associates in Medicine

Irena Antonowicz, Ph.D.

Jerome O. Klein, M.D.

Visiting Research Associate in Medicine

Chiung-Lin Chen, M.D. (9/15/66-1/15/67)

1966 - 1967

Coordinator of Patient Care

T. Berry Brazelton, M.D.

The Adolescents' Unit

Chief

J. Roswell Gallagher, M.D.

Associates in Medicine

Robert P. Masland, Jr., M.D.

Harry B. Stults, Jr., M.D.

Assistant in Medicine

Morton Jerome Franklin, M.D.

Charles S. Gleason, M.D.

John A. Spargo, M.D.

Research Associate

Carl C. Seltzer, Ph.D. (Anthropology)

Consulting Physicians

C. Cabell Bailey, M.D.

Warren R. Guild, M.D.

William R. Hill, M.D. (Dermatology)

Simeon Locke, M.D. (Neurology)

W. Warren Point, M.D.

Herbert Selenkow, M.D.

Consulting Ophthalmologist

Albert E. Sloane, M.D.

Consulting Gynecologist

Somers H. Sturgis, M.D.

Child Health Division

Chief

Joel J. Alpert, M.D.

Senior Associate in Medicine

William M. Schmidt, M.D.

Associates in Medicine

DeWitt C. Baldwin, Jr., M.D.

John K. Brines, M.D.

J. Whitney Brown, M.D.

Ilse E. J. Gorbach, M.D.

M. Grace Hussey, M.D.

Dorothea May Moore, M.D.

John S. Robey, M.D.

Derek Robinson, M.D.

Samuel N. Sherry, M.D.

Lendon Snedeker, M.D.

Leon Sternfeld, M.D.

Assistants in Medicine

Margaret C. Heagarty, M.D.

Hedwig Elizabeth Rose (Orner), M.D.

Eva J. Salber, M.D.

Arthur J. Salisbury, M.D.

Isabelle Valadian, M.D.

Martin K. White, M.D.

Consulting Obstetrician

Peter G. Robbins, M.D.

Research Associates

John Kosa, Ph.D.

Leon S. Robertson, Ph.D.

Special Medical Divisions
Clinical Genetics Division

Chief

Park S. Gerald, M.D.

Assistants in Clinical Genetics

Gerald E. Bloom, M.D.

Joseph L. Kennedy, Jr., M.D. (to 12/31/66)

Ellen Soo Sun Song Kang, M.D.

Stanley Walzer, M.D.

Hematology Division

Chief

Louis K. Diamond, M.D.

Associates in Hematology

David G. Nathan, M.D.

Sherwin V. Kevy, M.D.

Herbert S. Strauss, M.D.

Assistants in Hematology

Gerald E. Bloom, M.D.

Mitsuko T. Laforet, M.D.

Research Associates in Hematology

Chester A. Alper, M.D.

Martin L. Klemperer, M.D.

Marshall Melin, Ph.D.

Harald Orjasæter, M.D. (to 1/31/67)

Immunology Division

Chief

Charles A. Janeway, M.D.

Associate

Fred S. Rosen, M.D.

Assistant

Martin L. Klemperer, M.D.

Research Associate

Ezio Merler, Ph.D.

Renal Metabolic Division

Chief

Francis X. Fellers, M.D.

Assistant in Medicine

Joseph L. Kennedy, Jr., M.D. (to 12/31/66)

Visiting Research Associate in Medicine

Christian Herrera, M.D. (to 9/30/66)

Endocrinology Division

Chief

John F. Crigler, Jr., M.D.

Associate

Joseph N. Fisher, M.D.

Research Associate

Norman I. Gold, Ph.D.

Research Assistant

Edwin Leonard Grab, M.A.

Allergy Division

Harry L. Mueller, M.D., *Chief*

Associates in Allergy

Irving W. Bailit, M.D.

Theodore Bennett, M.D.

Otto S. Nau, M.D.

Assistant in Allergy

George T. Critz, M.D.

Elizabeth A. Gregory, M.D.

William McK. Hume, M.D.

Lawrence S. Morse, M.D.

Harold J. Wheeler, M.D.

Cardiology Division

Chief

Alexander S. Nadas, M.D.

Senior Associates in Cardiology

Donald C. Fyler, M.D. (from 10/1/66)

Paul G. Hugenholtz, M.D.

R. Grier Monroe, M.D.

Associates in Cardiology

Walter J. Gamble, M.D.

Christopher G. C. LaFarge, M.D.

William H. Plauth, M.D.

Assistants in Cardiology

Walter H. Abelmann, M.D.

Albert Cohen, M.D.

Joseph G. Cutler, M.D.

A. A. Sasahara, M.D.

Jacob Wallace, M.D.

Richard Wolff, M.D.

Alla G. Zaver, M.D.

Research Associates in Cardiology

Warren M. Gold, M.D.

(*Pulmonary Physiology*)

Olli S. Miettinen, M.D.

(*Epidemiology*)

Richard Van Praagh, M.D.

(*Pathology*)

Cardiopulmonary Laboratories

R. Grier Monroe, M.D., *Director*

Experimental Laboratory

Paul G. Hugenholtz, M.D., *Director*

Research Catheterization Laboratory

Donald C. Fyler, M.D., *Director*

Diagnostic Catheterization Laboratory

Warren M. Gold, M.D., *Director*

Pulmonary Laboratory

Mary Ellen Beck Wohl, M.D., *Associate*

Pulmonary Laboratory

Good Samaritan Division

Charles A. Janeway, M.D., *Chief*

Senior Associates in Medicine

Edward F. Bland, M.D.

Gabor Czoniczer, M.D.

Allen L. Friedlich, M.D.

Sprague W. Hazard, M.D.

Benedict F. Massell, M.D.

Alexander S. Nadas, M.D.

Marian W. Ropes, M.D.

David D. Rutstein, M.D.

George P. Sturgis, M.D.

Raymond Walther, M.D.

Edwin O. Wheeler, M.D.

Rheumatic Fever Research Unit at the
House of the Good Samaritan

Director

Benedict F. Massell, M.D.

Research Associates

Gabor Czoniczer, M.D.

Garabed Harutune Garabedian, M.D.

J. Gabriel Michael, Ph.D. (to 9/30/66)

DEPARTMENT OF ANESTHESIA

Anesthesiologist-in-Chief

Robert M. Smith, M.D.

Associates in Anesthesiology

John G. Adams, Jr., M.D.

Dean Crocker, M.D.

Assistants in Anesthesiology

Carol H. Johnson, D.D.S.

Mary P. Mehrez, M.D.

Angelo G. Rocco, M.D.

DEPARTMENT OF DENTISTRY

Dentist-in-Chief

Paul K. Losch, D.D.S.

Senior Associates in Orthodontics

Melvin I. Cohen, D.M.D.

Lennard T. Swanson, D.M.D.

Senior Associates in Pedodontics

Edward A. Sweeney, D.M.D.

(*Oral Biology Research*)

Robert F. Watton, D.M.D.

Associates in Pedodontics

Norman T. Budde, D.M.D.

John D. Doykos, III, D.M.D.

Eugen Albert Petersen, D.M.D.

Assistant in Pedodontics

Carl G. Cohen, D.M.D.

Associate in Oral Surgery

Walter C. Guralnick, D.M.D.

Donald L. Leake, D.M.D.

(*Oral Pathology Research*)

Assistants in Oral Surgery

William I. Hirshom, D.M.D.

Earle H. Rosenberg, D.M.D.

J. Henry Stempien, D.M.D.

Associates in Orthodontics

Edward I. Silver, D.M.D.

Peter K. J. Yen, D.M.D.

Assistants in Orthodontics

Henry C. Beebe, D.D.S.

Emory Farrington, D.M.D.

Abijah Pierce, D.M.D.

DEPARTMENT OF NEUROLOGY

Neurologist-in-Chief

Charles F. Barlow, M.D.

Associates in Neurology

Cesare T. Lombroso, M.D.
Donald H. Osterberg, M.D.
H. Richard Tyler, M.D.

Assistants in Neurology

Robert W. P. Cutler, M.D.
Gordon V. Watters, M.D.

Research Assistant

Anthony Lorenzo, M.S.

Randolph K. Byers, M.D.

DEPARTMENT OF NEUROSURGERY

Neurosurgeon-in-Chief

Donald D. Matson, M.D.

Senior Associate in Neurosurgery

John Shillito, Jr., M.D.

Associates in Neurosurgery

Joseph H. Galicich, Jr., M.D.
Francis X. Rockett, M.D.

Assistant in Neurosurgery

Larry K. Page, M.D.

DEPARTMENT OF OPHTHALMOLOGY

Ophthalmologist-in-Chief

Trygve Gundersen, M.D.

Senior Associate in Ophthalmology

Sumner D. Liebman, M.D.

Associates in Ophthalmology

Robert A. Petersen, M.D.
Richard M. Robb, M.D.

Assistants in Ophthalmology

Arthur Boruchoff, M.D.
Alfred W. Scott, M.D.

DEPARTMENT OF ORTHOPEDIC SURGERY

Orthopedic Surgeon-in-Chief

William T. Green, M.D.

Senior Associates in Orthopedic Surgery

Henry H. Banks, M.D.
Jonathan Cohen, M.D.
Paul W. Hugenberger, M.D.
Arthur W. Trott, M.D.

Associates in Orthopedic Surgery

Frank H. Bates, M.D.
Paul P. Griffin, M.D.

Junior Associates in Orthopedic Surgery

James G. Manson, M.D.
Arthur M. Pappas, M.D.

Assistants in Orthopedic Surgery

John B. McGinty, M.D.
Marvin Weinfeld, M.D.
Seymour Zimble, M.D.

Research Associate

Margaret Anderson, M.S.

Research Assistant

Mary E. Miller, M.A.

DEPARTMENT OF OTOLARYNGOLOGY

Otolaryngologist-in-Chief

Carlyle G. Flake, M.D.

Senior Associates in Otolaryngology

Charles F. Ferguson, M.D.
John C. Trakas, M.D.

Associates in Otolaryngology

Werner Chasin, M.D.
Robert W. Clubb, M.D.
Allan G. Edwards, Jr., M.D.
Sidney Shore, M.D.

Hearing and Speech Clinic Director

Allan C. Goodman, Ph.D.

Walter L. Cullinan, Ph.D.

DEPARTMENT OF PSYCHIATRY

Psychiatrist-in-Chief

George E. Gardner, Ph.D., M.D.

Senior Associates in Psychiatry

Children's Hospital
Tully Benaron, M.D.
Lydia Dawes, M.D.
Henry Wermer, M.D.

Judge Baker

Elizabeth S. Makkay, M.D.

Associates in Psychiatry

Children's Hospital
Chester C. d'Autremont, M.D.
Abraham D. Fineman, M.D.
Herbert I. Harris, M.D.

(Adolescents' Unit)

John P. Spiegel, M.D.

Judge Baker

John C. Coolidge, M.D.
Dorothy Macnaughton, M.D.
Lee M. Willer, M.D.
Donald H. Russell, M.D.
Peter H. Wolff, M.D.

Assistants in Psychiatry

Graham Burt Blaine, M.D.
(*Adolescents' Unit*)
John R. Blitzer, M.D.
Dexter M. Bullard, M.D.
William M. Crowell, M.D.
Richard Galdston, M.D.
Marvin B. Krims, M.D.

Theodore Lindauer, M.D. (thru 8/31/66)

Robert D. Mehlman, M.D.
Eugene U. Piazza, M.D.
Alan Prager, M.D.
Theodore C. Sheftel, M.D.
Harold Wolman, M.D.
Nancy (Youse) Rollins, M.D.

Judge Baker

Ernest W. Bergel, M.D.
Anna C. Brown, M.D.
Dan Ditmore, M.D.
Alice Fleming, M.D.
Thomas Frank, M.D.
Joseph F. Greaney, M.D. (to 8/31/66)
Nicholas Green, M.D.
Philip Lazaroff, M.D. (to 8/31/66)
Joseph J. Mullen, M.D.
Arthur Z. Mutter, M.D. (to 8/31/66)
Lawrence C. Salvason, M.D.
Theodore C. Sheftel, M.D.
Stanley Walzer, M.D.
John Weil, M.D.
Joan Zilbach, M.D.

Psychologist

Children's Hospital

Joseph P. Lord, Ph.D., *Chief*
Amelia Blackwell, Ph.D.
Wilfred E. Calmas, Ph.D.
Haskel Cohen, Ph.D.
Miriam Fiedler, Ph.D. (M.I.H.)
William Fitzgerald, Ph.D. (*Cerebral Palsy*)
Marjorie Gerdine, M.A. (*Seizure Unit*)
Harold Goodglass, Ph.D. (*Seizure Unit*)
Jane Hulek, Ph.D. (to 9/30/66)
(*Cerebral Palsy Research*)
Bruce Johnson, Ph.D. (9/1/66)
Majorie Kettell, Ph.D. (*PKU Research*)
Eva Powers, M.A.
Geraldine Rickard, Ed.D.
Ann Salomon, Ph.D.
Amnon Shai, M.A. (9/1/66)
Celia Schulhoff, M.A.
Annette Silbert, Ph.D. (*Heart Research*)
Albert Trieschman, Ph.D.
Charles Woodbury, Ph.D.

Judge Baker

Bessie Sperry, Ph.D., *Chief*
Thelma Alper, Ph.D.
Luleen Anderson, Ph.D.
Roger Bibace, Ph.D.
Richard Brodie, Ph.D.
Murray Cohen, Ph.D.
Paule Daum, M.A. (to 8/31/66)
Pauline Hahn, Ph.D. (*Res. Dir.*)
William Hire, Ph.D.
Irving Hurwitz, Ph.D.
Hyman Kempler, Ph.D.
Joseph Keville, Ph.D.
Arne Korstvedt, Ph.D.
Philip Kulzansky, Ph.D.
Herbert Lipton, Ph.D.
Joseph Massimo, Ed.D.
Gene Nameche, Ph.D.
David Ricks, Ph.D.
Max Schleiffer, Ph.D.
Judith Schaefer, Ph.D.
Robert Templeton, Ed.D.

Ellen Tessman, Ph.D.
Marian Winterbottom, Ph.D.
Robert Young, Ed.D.

Research Associates

Children's Hospital
Sydney Croog, Ph.D. (*Sociology*)
Eric H. Lenneberg, Ph.D. (to 1/31/67)
(*Psychology*)
Barbara K. Sutherland, Ph.D.
(*Adolescents' Unit*) (*Psychology*)
Judge Baker
James Teele, Ph.D. (*Sociology*)

DEPARTMENT OF RADIOLOGY

Radiologist-in-Chief

Edward B. D. Neuhauser, M.D.

Radiologist

Martin H. Wittenborg, M.D.

Senior Associate in Radiology

G. B. Clifton Harris, M.D.

Associate in Radiology

N. Thorne Griscom, M.D.

Assistant in Radiology

Robert A. Nebasar, M.D.

Radiotherapist

Melvin Tefft, M.D.

Physicist

M. Rosemary Kennedy, B.Sc.

DEPARTMENT OF SURGERY

Surgeon-in-Chief

Robert E. Gross, M.D.

Senior Associates in Surgery

William F. Bernhard, M.D.
Luther A. Longino, M.D.
Donald W. MacCollum, M.D.
Samuel R. Schuster, M.D.
George B. Starkey, Jr., M.D.

Associates in Surgery

Thomas W. Botsford, M.D.
John W. Chamberlain, M.D.
Chilton Crane, M.D.
John H. Fisher, M.D.
Joseph E. Murray, M.D.

Assistants in Surgery

Angelo Eraklis, M.D.
Robert M. Filler, M.D.
George H. Gifford, M.D.
John C. Norman, M.D.
Alan D. Perlmutter, M.D.
Louis F. Plzak, M.D.
Robert L. Replogle, M.D.
Kenneth J. Welch, M.D.

Research Assistant

Katherine C. Dearborn (10/1/66)
(*Surgical Research*)

DIVISION OF LABORATORIES AND RESEARCH

Chairman

Sidney Farber, M.D.

Department of Pathology

Pathologist-in-Chief

Sidney Farber, M.D.

Pathologist

Gordon F. Vawter, M.D.

Cardiac Pathologist

Richard Van Praagh, M.D.

Orthopedic Pathologist

Jonathan Cohen, M.D.

Neuropathologist

Floyd Gilles, M.D.

Assistant Pathologists

Jules Edlow, M.D.
Hubert Jockin, M.D.

Senior Associates in Pathology (Experimental)

Samuel S. Epstein, M.D.
Agnes Burt Russfield, M.D.
Betty Geren Uzman, M.D.

Research Associates in Pathology

Richard A. Adams, Ph.D.
Rogelio A. Alarcon, M.D.
Donald L. D. Caspar, Ph.D.
Elizabeth Claflin, Ph.D.
Carolyn Cohen, Ph.D.
J. LeRoy Conel, Ph.D.
Allen C. Crocker, M.D.
George E. Foley, Sc.D.
Shou Cheng J. Fu, Ph.D.
Jacob Goldstein, Ph.D.
Thomas C. Hall, M.D.
Tessa Hedley-Whyte, M.D.
Mervyn Israel, Ph.D.
E. Elizabeth Jones, Ph.D.
David Kessel, Ph.D.
Awtar Krishan, Ph.D.
Herbert Lazarus, M.A.
Arthur Longley, Ph.D.
Susan Lowey, Ph.D.
Charlotte Maddock, M.D.
Saul Malkiel, M.D., Ph.D.
Theodor Marcus, Ph.D.
Robert McCarthy, Ph.D.
Thomas A. McCoy, Ph.D.
Johannes Meienhofer, Ph.D.
Edward J. Modest, Ph.D.
Richard S. Morgan, M.D.
Buford DeW. Roberts, Ph.D.
Andre Rosowsky, Ph.D.
Henry Slayter, Ph.D.
Yoshimoto Sano, D.M.S.
Wan Lyng-Liu Shum, Ph.D.
George Yerganian, Ph.D.

Research Assistants in Pathology

Barbara Brown, B.A.
Sah Sook Cho, M.S.
Arlene Flowers, B.A.
Henry Gagnon

Betty Jean Hargis, Ph.D.
John Howard
Marjorie Kasac
Kanki Komiyama
Demetrius Kounaris, B.A.
K. S. Lavappa
Mary Delaney Mello, B.S.A.
Robert Mermelstein, Ph.D.
Anja Mitchell
Aysel Pirnar, M.D.
Albert Roy, M.A.
M. Saito
Geraldine Slavin
Carlos Sonnenschein, M.D.
Ho Ti, M.S.
Dorothy Trites, B.S.

TUMOR THERAPY DIVISION

Senior Associates in Medicine

William Berenberg, M.D.
Allen C. Crocker, M.D.
Thomas C. Hall, M.D.
Anna J. Mitus, M.D.
William I. Neikirk, M.D. (to 10/1/66)
Harry Shwachman, M.D.

Associates in Medicine

Clementina Geiser, M.D.
E. Manning Sears, M.D.

Assistant in Medicine

George M. Gill, M.D.

Radiotherapist

Melvin Tefft, M.D.

Research Associates in Medicine

Robert Amick, M.D.
John A. Cavins, M.D.
Christian Khung, M.D.
Miriam Manning, M.D.
Larry Nathanson, M.D.
Anthony Piro, M.D.
Hans B. Nevinsky, M.D.
Albert Schilling, M.D.

LABORATORIES OF CLINICAL PATHOLOGY

Chief

Harry Shwachman, M.D.

Bacteriologist

George E. Foley, Sc.D.

Assistant Bacteriologist

Kevin Beckett, M.S.

Research Associates

Morris N. Green, Ph.D.
Kon Taik Khaw, M.D.
Louis Kopito, M.S.
Abbas Mahmoodian, Ph.D. (*Pharmacy*)

RESEARCH DIVISION OF INFECTIOUS DISEASE

Chief

John F. Enders, Ph.D.

Research Associates

George Th. Diamandopoulos, M.D.
Samuel L. Katz, M.D.

CONSULTANTS

Raymond D. Adams, M.D., *Neurology*
Benjamin Alexander, M.D., *Medicine*
Theodore L. Badger, M.D., *Medicine*
A. Clifford Barger, M.D., *Physiology*
James Baty, M.D., *Medicine*
Elkan Blout, Ph.D., *Chemistry*
Hathorn P. Brown, M.D., *Urology*
Paul A. Chandler, M.D., *Ophthalmology*
Hans Clarke, Ph.D., *Chemistry*
David G. Cogan, M.D., *Ophthalmology*
John M. Craig, M.D., *Pathology*
Gustave J. Dammin, M.D., *Pathology*
Edward Daniels, M.D., *Psychiatry*
Bernard D. Davis, M.D., *Microbiology*
Derek E. Denny-Brown, M.B.Ch.B., *Neurology*
Lewis Dexter, M.D., *Medicine*
Isaac Djerassi, M.D., *Pathology*
William A. Elliston, M.D., *Orthopedic Surgery*
Kendall Emerson, M.D., *Medicine*
Dana L. Farnsworth, M.D., *Medicine*
Don W. Fawcett, M.D., *Anatomy*
Benjamin G. Ferris, M.D.,
Environmental Health
Sydney S. Gellis, M.D., *Medicine*
Horace M. Gezon, M.D., *Medicine*
J. Hartwell Harrison, M.D., *Urology*
Arthur Hertig, M.D., *Pathology*
Howard H. Hiatt, M.D., *Medicine*
William W. Howells, Ph.D., *Anthropology*
Henry W. Hudson, Jr., M.D., *Surgery*
Edward Kass, M.D., *Infectious Diseases*
Eugene P. Kennedy, Ph.D., *Biochemistry*
Sidney Kibrick, M.D., *Infectious Diseases*
Edmund Klein, M.D., *Pathology*
Henry I. Kohn, Ph.D., M.D., *Radiology*
Otto Krayner, M.D., *Pharmacology*
Stephen W. Kuffler, M.D., *Neurophysiology*
Eugene M. Landis, M.D., *Physiology*
Arthur J. Linenthal, M.D., *Medicine*
Joseph Marks, M.D., *Radiology*
Jean Mayer, Ph.D., D.Sc., *Nutrition*
William Meissner, M.D., *Pathology*
Francis D. Moore, M.D., *Surgery*
Duncan Reid, M.D., *Obstetrics*
Ferdinand Salzman, M.D., *Radiology*
Harold Schuknecht, M.D., *Otolaryngology*
Magnus Smedal, M.D., *Radiology*
Arthur Solomon, M.D., *Nuclear Medicine*
Somers H. Sturgis, M.D., *Gynecology*
Nathan B. Talbot, M.D., *Medicine*
Grantley Taylor, M.D., *Neoplastic Diseases*
George W. Thorn, M.D., *Medicine*
Carl W. Walter, M.D., *Surgery*
Richard Warren, M.D., *Surgery*
Shields Warren, M.D., *Pathology*
Edward W. Webster, Ph.D.,
Physics in Radiology
Louis Weinstein, M.D., *Infectious Diseases*
Thomas H. Weller, M.D.,
Parasitic and Viral Diseases
James L. Whittenberger, M.D., *Physiology*
Paul Yakovlev, M.D., *Neuropathology*
Paul M. Zoll, M.D., *Medicine*

EMERITI

Donald L. Augustine, M.D.,
Comparative Pathologist, Emeritus
Albert H. Brewster, M.D.,
Orthopedic Surgeon, Emeritus
C. Sidney Burwell, M.D.,
Consultant in Medicine, Emeritus
Allan M. Butler, M.D.,
Consultant in Medicine, Emeritus
Randolph K. Byers, M.D.,
Neurologist-in-Chief, Emeritus
Austin W. Cheever, M.D.,
Consultant in Dermatology, Emeritus
Stewart H. Clifford, M.D.,
Senior Associate in Medicine, Emeritus
Stanley Cobb, M.D.,
Consultant in Neurology, Emeritus
John A. V. Davies, M.D.,
Senior Associate in Medicine, Emeritus
Edwin B. Dunphy, M.D.,
Consultant in Ophthalmology, Emeritus
Martha M. Eliot, M.D.,
Consultant in Child Health, Emeritus
Henry Gallup, M.D.,
Senior Associate in Medicine, Emeritus
Lewis W. Hill, M.D.,
Physician, Emeritus and Allergist, Emeritus
Eliot Hubbard, Jr., M.D.,
Physician, Emeritus
William E. Ladd, M.D.,
Surgeon-in-Chief, Emeritus
Robert H. Morris, M.D.,
Orthopedic Surgeon, Emeritus
Francis C. Newton, M.D.,
Consultant in Surgery, Emeritus
David W. Sherwood, M.D.,
Associate in Medicine, Emeritus
Abraham S. Small, M.D.,
Associate in Medicine, Emeritus
Richard M. Smith, M.D.,
Physician-in-Chief, Emeritus
Harold C. Stuart, M.D.,
Consultant in Child Health, Emeritus
Edwin T. Wyman, M.D.,
Physician, Emeritus

STANDING COMMITTEES OF THE STAFF 1966-1967

Current Practices Committee

Dr. Samuel R. Schuster, *Chairman*
Dr. John G. Adams, Jr.
Dr. William H. Plauth
Mrs. Phyllis Downing
Dr. Richard Galdston
Miss Maxine Gilson
Dr. N. Thorne Griscom
Mr. Richard D. Mills
Dr. Arthur Pappas
Miss Ellen Parkis
Miss Barbara Sachs
Miss Carolyn Sharpe

Miss Olive Simard
Dr. Lennard Swanson

Pharmacy Committee

Dr. Harry Mueller, *Chairman*
Dr. Allen Crocker
Dr. Dean Crocker
Dr. Alan D. Perlmutter
Dr. Thomas C. Hall
Mrs. Lois Morgan
Dr. Lendon Snedeker
Mr. Arthur Thompson
Mrs. Frances Tolland

Postgraduate Instruction Committee

Dr. Alexander S. Nadas, *Chairman*
Dr. Dexter Bullard
Dr. Robert M. Filler
Dr. Paul P. Griffin
Dr. G. B. Clifton Harris
Dr. Gordon F. Vawter

Operating Room Committee

Dr. Robert M. Smith, *Chairman*
Dr. Carlyle G. Flake
Dr. William T. Green
Dr. Robert E. Gross
Miss Olga Kinnal
Dr. Donald D. Matson
Miss Muriel Vesey

Radiation Safety Committee

Dr. Martin H. Wittenborg, *Chairman*
Miss Margaret Heafey
Dr. Edward Modest
Dr. Fred Rosen
Dr. Melvin Tefft

Medical Records Committee

Dr. Sherwin V. Kevy, *Chairman*
Dr. Henry H. Banks
Miss Jeanne Colt
Dr. Allen Crocker
Dr. Angelo Eraklis
Miss Ruth Hayward
Mr. Webster McKnight
Mr. Richard D. Mills
Dr. John Shillito, Jr.
Dr. Lendon Snedeker
Dr. Charles Woodbury

Private Services Committee

Dr. William Berenberg, *Chairman*
Dr. Paul Hugenberger
Mr. Richard D. Mills
Dr. Kenneth Welch
Dr. William D. Winter

Committee on Infections

Dr. Samuel Katz, *Chairman*
Dr. Jonathan Cohen
Mr. Lawrence Levinson
Mr. Richard D. Mills
Miss Barbara Sachs
Dr. Harry Shwachman

Committee on Education and Recreation

Dr. Lendon Snedeker, *Chairman*
Dr. T. Berry Brazelton
Dr. Chester C. d'Autremont
Miss Elizabeth Maginnis
Dr. Robert P. Masland
Mr. Richard D. Mills
Mrs. Barbara Patterson
Miss Priscilla Peabody

Disaster Committee

Dr. Lendon Snedeker, *Chairman*
Miss Aldra Dickie
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Dr. Richard Galdston
Dr. Paul P. Griffin
Dr. G. B. Clifton Harris
Mr. Eric Hammond
Dr. Sherwin V. Kevy
Miss Dorothy Pratt
Dr. Samuel Schuster
Mr. John Skinner

Committee on Rehabilitation

Dr. William T. Green, *Chairman*
Miss Shirley Cogland
Dr. George E. Gardner
Dr. Allan C. Goodman
Miss Elizabeth Maginnis
Miss Priscilla Peabody
Dr. Lendon Snedeker
Dr. Arthur Trott

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Dr. Charles Barlow, *Chairman*
Dr. William T. Green
Dr. Donald D. Matson

Committee on Research and Human Experimentation

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Dr. Charles Barlow
Dr. Leonard W. Cronkhitte, Jr.
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Dr. Park Gerald
Dr. Arthur Pappas
Dr. Peter Wolff

Visual Education Committee

Dr. John Shillito, Jr., *Chairman*
Dr. John W. Chamberlain
Mr. Eric Hammond
Mr. Ferdinand Harding
Dr. Arthur W. Trott

Tissue Committee

Dr. Gordon Vawter, *Chairman*
Dr. Jonathan Cohen
Dr. Floyd Gilles
Dr. Hubert Jockin
Dr. Luther A. Longino
Dr. Sidney Shore

Volunteers Committee

Dr. Charles Ferguson

Committee on Communications Disorders

Dr. Charles F. Barlow, *Chairman*
Dr. Allan C. Goodman, *Secretary*
Dr. William Berenberg
Dr. Charles F. Ferguson
Dr. George E. Gardner

Utilization Review Committee

Dr. Arthur W. Trott, *Chairman*
Dr. Edward C. Dyer
Dr. G. B. C. Harris
Mr. Richard D. Mills
Dr. George B. Starkey
Dr. Gordon V. Watters

Space Committee

Dr. Park Gerald, *Chairman*
Dr. Robert Cutler
Mr. Rudman J. Ham
Dr. Grier Monroe
Dr. Arthur Pappas

IN MEMORIAM

Alexander Whiteside, a Trustee since 1914 and former Counsel for the hospital, died March 5, 1966.
Mrs. Philip Stockton, for many years Director of Infants' Hospital and Incorporator of The Children's Hospital, died March 19, 1966.

Esther M. Longfellow, Chief Social Worker for the Newton-Baker Unit of the Judge Baker Guidance Center, died June 13, 1966.

Dr. Mary A. Halpin, Courtesy Medical Staff, died August 29, 1966.

Henry W. Bullock, Credit Manager in the Accounting Office, died December 9, 1966.

Donald Falvey, a Trustee since 1953, died February 6, 1967.

Verna Payne, Offset Pressman, Print Shop, died suddenly April 2. He was 30 years old and an employee at CHMC for one year.

Dr. William E. Ladd, Surgeon-in-Chief Emeritus and a pioneer in the field of pediatric surgery, died April 19, 1967.

FORM OF BEQUEST

I give, devise, and Bequeath to The Children's Hospital Medical Center, in the City of Boston, a charitable corporation organized under the Laws of the Commonwealth of Massachusetts, the sum of

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ASSISTANT TO THE GENERAL DIRECTOR

Lendon Snedeker, M.D.

The Assistant to the General Director is now responsible for administrative matters involving the Clinical Laboratories, The Children's Activities Services, the Volunteer Service, Visual Education, and Employee Health Service. In addition, medico-legal affairs are handled by this office, as is liaison with the United Community Services. In all of these areas there has been stepped-up activity during the past two years, reflecting increased patient census and the many added loads this carries with it, as well as greater community attention upon health problems.

Clinical Laboratories

Dr. Shwachman's laboratories in which clinical examinations are made in the areas of bacteriology, chemistry, hematology, stool examination, and urinalyses continue to contend with the increased work load, which during 1966 alone went up by about 15 per cent. This was accomplished without any additional space allocation, but the importance of the new facilities to be provided through funds from the Development Program becomes ever more evident.

This office was assigned administrative responsibility for several other laboratories, which include:

Electroencephalographic Laboratory — This department continues to operate in two separate locations, but expects centralization of effort will be possible when space becomes available in Building A following the opening of the new out-patient building. This laboratory did 4,138 electroencephalograms during 1966, and 544 sonor scans.

Cardiology Laboratories—These comprise the ECG, the Vectorcardiograph Laboratories in the Cardiac Clinic, as well as the two Cardiac Catheterization Laboratories. In 1966 these laboratories compiled the following service statistics: Electrocardiograms—4037, Phonocardiograms—333, Vectorcardiograms—274, Cardiac Catheterizations—419.

Genetics Laboratory—Now operating at full capacity, this laboratory has what appears to be an ever-increasing work load. It performed 966 occasions of service in 1966, 370 of them Chromosome Analyses, 108 Buccal Smears, and 498 Hemoglobin Electrophoreses.

Transfusion Service—One of the busiest transfusion services in the country, and the largest hospital blood bank in the world devoted exclusively to children, the CHMC transfusion service reports a consistent step-up of activity. In 1966, there were 11,489 transfusions given, 25,000 samples of blood were crossmatched between patient and donor, and 5,511 blood-drawing procedures. Through use of an anti-coagulant developed in the Transfusion Service which

allows preservation of whole blood for 28 days in standard refrigerated temperature, the Blood Bank has an outdating of only 2.3 per cent of all blood collected—probably the lowest rate in the country.

Children's Activities Service

This service, formerly known as Patient Education and Recreation, continues to be active on all hospital divisions. The Director, Mrs. Barbara Patterson, is aided by seven full-time Child Activity Specialists who instruct student teachers and supervise volunteers.

It has been possible to give more attention to patients in the House of the Good Samaritan, some of whom present a special challenge in view of their long-term periods of stay. Considerable help has been given to this aspect of the program by the volunteer students from Noble and Greenough schools.

Work term students serving as department assistants have made possible a variety of educational projects, as well as filling the necessary complement of personnel required to meet the heavy census conditions. Participating colleges were: Beloit, Bennington, Goddard, Kalamazoo, Antioch, Keuka, Tufts, Wheelock, Garland, Endicott Junior College, Boston University, and Lesley College.

Toward refined role definition and improved technique the department has continued to meet weekly with Dr. Chester d'Autremont, Associate in Psychiatry and Dr. T. Berry Brazelton, Senior Associate in Medicine, Coordinator of Patient Care.

A second conference of workers in Children's Activities programs was held at Johns Hopkins Hospital in May 1966, at which two papers were given by Mrs. Patterson, one on personnel for Children's Activities programs, and the other on the use of the Volunteer in Pediatric Recreation. Mrs. Patterson continues as a member of the Interim Committee, which has the two-fold purpose of continuing the development of a national organization, and planning for a third conference to be held at Philadelphia Children's Hospital in May, 1967.

As an in-service education project, the department presented an Afternoon Film Series, "Concerning Children" of films at twelve afternoon meetings followed by moderated discussions open to all hospital personnel.

Volunteer Service

Our hospital volunteers, in terms of hours, have been slightly less active this year than was the case in 1965. However, it has been possible to increase

significantly the amount of time spent on the Tumor Therapy Division as well as in the Out-Patient Department. It is hoped that with the coming of the new Out-Patient Building this will become a more significant phase of our Volunteers activities.

The annual party for the volunteers was held in the Jimmy Fund Auditorium where volunteer pins were given out and Dr. Jean Mayer, Professor of Nutrition at the Harvard School of Public Health, was the principal speaker.

Visual Education

The Visual Education Department, because of its activity, has added another man to the staff; Mr. John J. Corrigan, who is now training as a Junior Bio-Photographer. There are now four photographers at work in the Department.

Mr. Harding, the Head of the Department, delivered two papers before the Boston Chapter of the Biological Photographic Association. During the year he also became a Registered Senior Biophotographer in the field of Medicine.

The Department is continuing to produce motion pictures as a part of the evaluation of Cerebral Palsy patients. This program has been going on for about three years, and an average of one patient a week is filmed. The Department also has completed about 75 sets of 60 slides each for Dr. Harry Shwachman. These will be sent all over the world to be used in training people regarding the treatment of Cystic Fibrosis. A total of 11,655 negatives were exposed in 1965, and 12,226 in 1966. In addition, 16,885 feet of motion picture film was exposed in 1965, and 16,975 feet in 1966.

Employee Health Service

This service, with its dual role of assuring that all employees meet the physical requirements for working in a hospital for sick children and at the same time providing an important extra benefit to employees themselves, last year performed 12,769 instances of service. A total of 1,102 physical examinations were done, not only for new employees but for those already at work at Children's, and of this number 249 were referred either to hospitals or private physicians for care of physical complaints. These and other service statistics were an increase over the previous period, reflecting, again, the expanding activity at the hospital.

Currently, efforts are being made to relate the Health Service more actively to the Personnel Department because of these two department's mutual responsibility on management of forms, reports and

insurance matters having to do with industrial accident cases.

In addition, steps are being taken to initiate a program of tuberculin testing (tine testing) for all employees in hopes this will reduce the need for chest X-rays of employees, which is costly. There are problems involved in setting up such a program, but it is expected these will be solved in due time.

Medico-Legal Affairs

This year there have been more medico-legal situations to handle than usual. This office has continued to review all reports of untoward incidents, has secured additional data when indicated, and reported situations potentially troublesome to our insurance underwriters.

In cooperation with the Social Service Department we have met regularly at monthly intervals with representatives of the Division of Child Guardianship to review reported cases of suspected physical injury. This has improved our understanding of these unfortunate situations which are almost always evidence of severely deranged family relations. The protective role of the DCG is now better understood by the Medical Staff and reporting has been facilitated. It is sometimes impossible to obtain protective custody for children whose lives are particularly threatened. Cases involving neglect as well as injury are common but are not covered under the present statute. We are working with the DCG in the effort to give them maximum support and to have the law broadened so as to increase its efficacy in protecting our mutual charges. During the year 1966 there were 33 cases reported to the Division.

Community Activities

As Chairman of the Health, Hospitals and Medical Care Division of United Community Services, Dr. Snedeker has been involved in several community health matters. The Division cooperates with the Mass. Department of Mental Health and the Mass. Association for Mental Health in joint planning for the new mental health program in Greater Boston. Dr. Sprague Hazard of our Medical Staff chairs this Metropolitan effort. In addition the Division has aided Hospital Planning for Greater Boston, Inc. in its search for a Director and necessary financial support. This year has also seen the creation of a new voluntary agency, the Council of Social Data Systems, which is the beginning of a multi-disciplinary effort to develop computerized information of great potential value for those planning new services in Greater Boston.

ASSOCIATE DIRECTOR FOR FISCAL AFFAIRS

Walton E. Devine

In the last report of this department, which followed the close of the 1964 fiscal year, a detailed description of plans for a computerized total management system was outlined. During the past two years this system began to be realized, and at the close of this fiscal year, September 30, 1966, many hospital functions had been programmed onto the computer.

Although many of these computerized operations are similar to those known to industry (i.e. payroll and other accounting functions), the greatest gains to Children's Hospital and to the hospital management field have been in areas previously unknown and undeveloped by hospitals. The most outstanding achievement was in the handling of bed assignments. This project could not have been successfully accomplished without the extensive efforts of Mr. Webster J. McKnight, supervisor of the project, and his associates. The bed utilization system provides the Admitting Office with immediate knowledge of all beds available for assignment to incoming patients, changes of patient location between nursing units, supportive information during the patient's stay at CHMC, and discharge information which frees bed space for early reoccupancy.

As the bed utilization program came into being, the developmental study opened other new areas for further exploration. From information gathered, creation of several satellite programs have provided us with the following:

- The ability to produce patient occupancy statistics and create patient room charge information as of 12:01 a.m., each day;
- a unit record patient master file and charging procedure for services rendered by the Respiratory Therapy Department;
- a system which provides for checking in and out by nursing personnel on the various nursing divisions so staffing of patient areas can be accomplished effectively;
- statistics relating to activity and service rendered by various patient divisions.

At the present time, the hospital is converting its computer activity from its original IBM 1440 equipment to an IBM 360/30. The new installation provides expanded capability and will enable us to move into many advanced areas of computer service—new not only to Children's but to the entire hospital field.

Children's leadership in producing an "on-line" program of computerized assistance in an area critical to improve patient service has attracted visitors from all corners of the United States and several foreign countries. The success of the installation has developed an enthusiasm among CHMC staff that makes it imperative for us to continue our study and development of other programs critical to the total hospital

profession and of immediate gain to the staff of Children's.

Period of Change

Extensive changes are taking place in the Fiscal Affairs Division of CHMC. Every department and service area is being evaluated as to its responsibility and service to the hospital. Mr. Webster McKnight has been named Assistant Director of Fiscal Affairs, and in this move will assume increased responsibility for general financial management.

In redefining departmental functions, the accounting operation was placed under the leadership of the Controller, a position previously held by the Associate Director of Fiscal Affairs, and Mr. Howard Zele was appointed to this position. A new department of Auxiliary Operations has been created to supervise the many satellite facilities of CHMC. In the near future, the hospital's new housing complex will be completed and will become the largest single function to be administered by this department. Mr. Josiah B. Morrill, with many years of hotel management experience, has been appointed to head this new department.

With the constantly increasing demands that have been placed upon the operations of CHMC in every area, the financial operation has been asked to shoulder its share of the burden. Credit for accepting these added responsibilities should be given to all area managers and their personnel. More patient accounts and daily charges have increased the load on the patient billing by over 300% since September 1964. Constant review of billing rates and procedures for improving patient services has doubled the demands made upon the energies of the Methods and Procedures Department. In the hospital printing service, over 12,000,000 impressions were made in 1966 as compared with about 8,000,000 in 1964. The climb in bed and facilities utilization in the last three years has increased 12.3% and this can readily be converted into a recognition of the increased demands upon the services required of the General Stores operation of Children's as well as those of the Purchasing Department.

During the past months, the administration of Children's has been actively involved in the newly created medical assistance program which is the direct result of the Title XIX (Medicaid) Federal health legislation. Mr. John Nadolski has been assigned the responsibility for managing this very critical area of support for charges incurred for services to patients. In the coming months this program will expand materially, and our early and knowledgeable approach has given Children's a sound start in handling the many facets of this program of expanded assistance to those in need of financial support for hospital care.

Before taking note of the significant activities of the past year and our plans for the forthcoming year it seems appropriate to sound a note of appreciation for the 450 employees who work in the General Services division of the Hospital. The efforts of these important employees who prepare our food, clean our buildings, repair our equipment, sterilize our instruments, do our wash, carry our messages, answer our telephones, fill our prescriptions, deliver our supplies, cut the grass, drive our trucks, and countless other tasks are often taken for granted. It should not be. The excitement of new buildings, the significant research accomplishments of our investigators, and the miracles of healing by our doctors and nurses make it easy to forget the contribution made by these service people.

During the summer of 1966 all of the employees of The Children's Hospital Medical Center were given the opportunity to make a gift or pledge to the REACH (Resources of Excellence for Advances in Child Health) campaign. Over 85 per cent of the General Services employees contributed to this fund. This expression of interest and support for the future of Children's Hospital and the work it will do was an inspiration for the Medical Staff, Trustees and the community as a whole.

Communications and Supply

During the past year the section of General Services which we call Communications and Supply, headed by Mr. John Skinner, made significant plans which call for a single centralized distribution system for all types of supplies throughout the entire Medical Center. They also call for the establishment of quota within each division and department for all types of supplies so that stocking may become automatic. In addition a Communications Center is now being established to receive all requests by departments for service or emergency requests for supplies not covered by the quota system. As these objectives are reached we will in fact have established a single source of service and supply to which every clinic, nursing division and department can relate.

The hospital's Planning Office, headed by Mr. Arthur Stomberg, has expanded its efforts to meet the heavy demands of our major building program. Planning was completed, bids received and construction began on the \$5,000,000 Clinics and Diagnostic Building during the past year with anticipated completion in July of this year.

Final plans and contract negotiations were completed and construction started on the Patient and Staff Residential Complex. Completion of this \$7,000,000 effort is scheduled for the Spring of 1968.

Architectural plans for the \$10,000,000, 16-level Basic Pediatric Sciences Building on Longwood Avenue between Blackfan and Binney Streets continued throughout the entire year with final plans to be ready for bidding in May of 1967.

Early design work was also begun on the new Clinical and Medical Services Building which will give us the added beds, clinical laboratories, operating rooms, X-ray expansion, departmental offices, conference center, and other supporting facilities needed.

Dietary Department

The Dietary Department, headed by Miss Maxine Gilson, continued its progress during the year in several areas. Activity increased for our consulting nutritionist in the Outpatient Department clinics. It is expected that this function will be in even greater demand as we move into the new Clinics and Diagnostic Building. All of our patient kitchens, formerly managed by the nurses on the floors, have now been taken over by Miss Gilson's staff.

As in previous years the numbers of meals served to staff, employees and visitors continued to grow. We now serve over 3,000 people per day, not including those served from vending machines. The hours of the coffee shop, operated by the Women's Committee, were expanded to include the supper hour with the additional hours being covered by the Dietary Department. This has met with enthusiastic response from the parents and staff.

The patient formula room became a function of this department during the past year, bringing it under the direct supervision of a registered dietitian who is also responsible for the preparation of special diets. This change has caused substantial cost reduction.

Miss Gilson has been working actively with the Planning Office in preparation for the opening of an 80-seat lunch shop on the lobby floor of the Clinics and Diagnostic Building. This shop will be operated by the Dietary Department as a service to our outpatients and their parents.

As with our automobiles or homes, preventive maintenance is the key to the successful operation of a hospital plant. Mr. John Clemons, Plant Superintendent, heads the department with a staff of approximately 60 electricians, plumbers, mechanics, painters, carpenters and general repair men. During the past year he has gradually improved his staff both in numbers and skills in preparation for the increased responsibility of operating our new buildings as well as our existing ones. More and more emphasis will be placed upon prevention of breakdown and deterioration.

The Department has also been extremely busy with the adaptation and integration of our existing utility systems to those of our new structures. This

In November of 1966 Mr. Robert Lockerman became our Manager of Housekeeping. Mr. Lockerman, a certified executive housekeeper, came to us from the University of Texas, Medical Branch, in Galveston, Texas, where he had been the Executive Housekeeper for more than ten years.

ASSOCIATE DIRECTOR FOR PATIENT SERVICES

Richard D. Mills

The continued increase in the number of outpatients and inpatients cared for at The Children's Hospital Medical Center is shown in the statistics of this report. While such figures bear witness to an increase in level of activity, utilization of facilities and community services; they also emphasize a constant need for review and revision of the space needs, personnel requirements, policies and procedures for carrying out the highest standards of care in the most efficient and effective way. Specifically, this report will consider these matters as they concern the following departments of the Medical Center: Inpatient Admitting, Medical Records, Reception and Information, Physical Therapy, Surgical Appliance Shop, Social Service and Outpatient Services.

During the year, 12,008 patients were admitted, an increase of 596 over the previous year and 901 over the year ending 1964. Average occupancy was 88.2 percent compared to 85.5 percent for 1964-65, 81.8 percent for 1963-64 and 76.2 percent for 1962-63. During over one-half of the year (51 percent) occupancy was at 90 percent or over; last year, only 36 percent of the time.

Inpatient Admitting

A continuing study of admissions to all services was started in March of 1966 by the Inpatient Registrar, Mrs. Mary Sullivan. The purpose of the study is to reduce the number of cancellations due to a lack of hospital beds of patients booked for admission, to facilitate the admission of patients to the proper division and reduce the number of "boarders", to better plan for the emergency admission as well as the elective admission, as a statistical reality, and to increase bed utilization by eliminating peaks and valleys during the week by effecting a more even flow of admissions and discharges. We have requested the full cooperation of the members of the medical staff, the resident staff and supervisors of nursing service in providing information on all desired admissions and contemplated discharges as soon as possible. We are pleased to report that there has been considerable progress towards the goals established. Ultimately, this advance information placed in the computer will further improve planning for all admissions and discharges.

In April, 1966, the bed utilization system was made operational between the Admitting Office and the various inpatient divisions. This system, employing the computer, is the first of many informational systems to be installed which will facilitate all departments and services.

Physical rearrangements within the admitting area have been limited by available space, but closing of the Hunnewell entrance eliminated through traffic. Several additional private interviewing rooms have been added and two medical examining rooms have been established to facilitate medical screening of

patients for elective admission. While these changes have made improvements in the admitting procedure for parents and their children, major improvements recommended by our Committee on Patient Care cannot be properly augmented without a 100 percent increase in space.

Medical Records

The Medical Records Department, under the direction of Miss Ruth Hayward, has been concerned over the past several years not only with the increase in the volume of medical record activity, but in the need for extensive 24-hour coverage and new systems for control of the medical record in order to have it complete and readily available. Statistics for 1966 show the following:

	1965-66	1963-64
(1) Total No. of Records Requested and Supplied	261,560	145,804
(2) Total No. of New Records Issued	22,495	20,599

An active Record Committee under the chairmanship of Dr. Sherwin Keyv has been most cooperative in making policy recommendations to improve record administration. A new concept in record filing and retention is being studied for installation next year. Considerable improvement in the perennial problem of transcribing doctors' dictation has been made and "current" status is anticipated within the coming year.

It is entirely proper and right that the responsibility for good hospital records be shared by all those concerned with patient care. In today's modern medical center with its wide fragmentation of services and specialties, the medical record serves as an important link in the over-all continuity of care of the patient.

Physical Therapy

Miss Shirley Cogland, Director of the Department of Physical Therapy, reports that the number of treatments rendered increased from 30,839 for the year ending September, 1964, to 36,102 for the year ending September, 1966, or a 17 percent increase over the two-year period. A substantial portion of this increase has been in the area of respiratory disorders among admitted patients and this aspect of physical therapy now accounts for 25 percent of all treatments rendered.

The ratio of outpatient treatments has dropped to 26 percent of all treatments. This decrease in no sense represents a lack of demand. It does indicate that little progress has been made in meeting this demand as recommended in 1964. While additional space was provided by remodeling the therapeutic pool area in 1965 into five treatment rooms, the availability of adequately trained therapists has become more acute. During the entire year, the department had a full complement for a period of only six weeks; and except for senior personnel, there was a 100 percent turn-over in staff.

The department continues its collaboration with local colleges and universities in training of the physical therapy student. New programs for training supporting personnel on assignments requiring less skill and judgment are under study. In addition, because of the broad spectrum of children's disabilities under care programs at this hospital, consideration should be given to the establishment of fellowships in pediatric physical therapy. Such programs do exist at certain medical centers but relate to adults and to geriatric problems.

Mrs. B. Paula Foley is in charge of the Reception and Information Services. Monthly in-service training programs are being conducted with all personnel. As the first point of contact in the hospital for many, it is essential that the receptionists are well trained, knowledgeable, and sensitive to the needs of the patient, parents, visitors and staff.

Surgical Appliance Shop

The Surgical Appliance Shop, under the direction of Mr. John Glancy, continues to be overwhelmed by a growing volume of work. Braces are becoming more complex and consequently require more time to manufacture. During the year, a four-months study of the department's work load was made. While certain studies of this organization have been made in the past, their recommendations have not recognized the "individual service" aspects required by the medical staff.

Of the recommendations made by Mr. Glancy and his staff, two are noted here:

(1) A study team of departmental personnel and medical staff be established to review the basic needs of various orthopedic devices to the end that improvements in design may be brought about with three goals in mind—better function, ease of production, and reasonable costs to produce.

(2) A plastics unit be established to utilize the wide variety of plastic materials now being adapted for bracing material. The advantages to the patient are many and the use of such materials requires less hours for production or repair. Implementation of this recommendation will require a minimum of 2,000 square feet of additional floor space.

Social Service

The department of Social Service now includes 33 full-time and part-time members with master's degrees, and five social work assistants with bachelor's degrees. These are assigned to the following services.

Medicine	13	3
Neurology and Neurosurgery	6	1
Orthopedics	2	1
Psychiatry	11	
Surgery	1	
Total	33	5

The department is under the direction of Miss Elizabeth Maginnis and operates administratively in groups relating to the major clinical services.

In today's modern medical center, the social worker has become the third member of the "team" made up of the doctor, nurse and the social worker. This team is concerned with the over-all care and cure decisions which affect the patient. There are four phases of activity to which the social worker by her training and through her contact with the patient or his family can make a major contribution: (1) collaborative diagnosis, (2) multi-disciplinary treatment, (3) continuity of care, and, (4) stimulation and solidification of community relationships. As any hospital grows increasingly committed to its responsibilities as a social institution, greater and greater should be the participation in all four phases of total patient care. There is substantial evidence among patients cared for on the inpatient divisions and in the outpatient clinics that the "chief complaint" is not only related but often caused by factors found in the patient's environment, his parental relationships, his own attitudes, fears and beliefs. This may occur more often among pediatric patients than among adults.

Outpatient Department

The Outpatient Department, under the direction of Miss Dorothy Pratt, R.N., spent considerable time in planning for moving the outpatient clinics to the new building to be completed in June of 1967. An Outpatient Service Committee was created with a representative appointed by the head of each medical department functioning in the new building and administration. It is hoped that this committee will be a permanent one and will concern itself with all future problems of policy and operation of the outpatient clinics.

In our planning, several important concepts are being followed which we believe are essential if this new facility is to serve our patients effectively. These are:

(1) All clinics should be housed in the new building except for the Child Health, Adolescent and Dental Clinics. The nature of these clinics and previous hospital commitments make their relocation impractical at this time.

(2) All clinics of the hospital will be under the administration of the Outpatient Department, and hospital-employed core personnel will provide all services in support of the patients seen by members of the attending and resident medical staff.

(3) The method of clinic intake should be reviewed, recognizing that referral to the appointment clinics will be from several sources, including:

- (a) CHMC Emergency Service
- (b) CHMC Inpatient Divisions
- (c) CHMC Staff Physicians
- (d) Local Medical Doctors

ASSOCIATE DIRECTOR FOR PATIENT SERVICES

- (e) Non-medical Agencies
- (f) Other Medical Agencies
- (g) Direct Patient Referral

(4) New systems for registering patients, evaluating their financial status, scheduling ancillary services, making appointments, and maintaining continuity of follow-up as part of the over-all care program will have to be developed to utilize, eventually, the services of the computer.

While the physical facilities of the new building will greatly add to the comfort and pleasure of the patient and his family, it is even more important that the availability of space allow for the instituting of improved methods of patient care. Initial plans are being made for remodeling the outpatient department area into a modern emergency-dispensary unit and a 20-25 bed over-night unit. Since only patients with appointments will be seen in the regular clinic, this new area will serve the increasing number of patients

who seek their medical care at the emergency unit of the hospital, whether the complaint is a true emergency or not.

We are well aware of the importance of establishing ambulatory care not as a minor function of the hospital, but as the first line of effort in serving the over-all community which expects from us high standards of medical care rendered effectively and efficiently.

Finally, the Hospital's Utilization Review Committee has conducted several sample studies of records as a means of evaluating the effectiveness of bed utilization. Reports on each study have been forwarded to the Staff Executive Committee with recommendations as provided by the By-Laws of the Medical Staff.

In closing, thanks are due the various department heads, members of the medical staff and resident staff, and the General Director for their fine cooperation and assistance during the past year.

Outpatient Statistics

	New Patients			Total Visits		
	1966	1965	1964	1966	1965	1964
Emergency Clinics:						
Medical	5,778	5,964	5,316	34,636	31,502	27,640
Surgical	1,967	2,179	2,063	10,622	9,305	8,547
Medical-Surgical	1,034	847	814	3,711	2,812	2,681
Total Combined						
Emergency . . .	8,779	8,990	8,193	48,969	43,619	38,868
Appointment						
Clinics	7,261	7,338	7,141	100,129	96,209	90,315
Total Clinics	16,040	16,328	15,334	149,098	139,828	129,183

The problem of caring for a rapidly increasing number of patients with a diminishing professional staff has been general throughout many phases of medicine, and especially in the field of anesthesia. The number of anesthetics administered at the Children's Hospital Medical Center increased approximately from 5,000 in 1960 to 7,923 in 1966. Simultaneously the contest for residents and staff is growing more intense as the supply of physicians falls behind the need. To meet this situation this anesthesia department has been endeavoring to increase the efficiency of the use of our personnel by better planning of hospital procedures, and by increasing the number of permanent staff so that there will be less dependence upon the unpredictable supply of resident physicians.

The first aim, and easily the greatest strength of the anesthesia department lies in patient care. This means safe anesthesia for the patient and satisfactory conditions for the surgeon. The goal remains the same but the means are altered as better anesthetic agents and more effective means of patient protection are developed.

Total anesthetic care of the child includes pre-operative preparation, anesthetic management and supportive care during operation, and continued observation and support during recovery while the patient remains in critical condition.

Sedation prior to operation helps the child meet the operative experience without fear, but if excessive medication is employed the child's respiration may be dangerously depressed. At present a real effort is being made to decrease the amount of medical sedation, and to make up for this by better mental preparation of the child by parents and pre-anesthetic rapport with the anesthesiologist. This becomes especially important when children must return for repeated operations, or when they are emotionally unstable and difficult to reassure. It has been one of our greatest endeavors to avoid the use of force when children are resistant to anesthesia. The traditional method of holding the child down and "getting on with it" now seems inexcusable. For such a child the anesthetic mask is the most unpleasant method of all, and it is much more humane to induce anesthesia either by sedation given by rectum, or by more rapid intravenous administration. With the abandonment of ether, there has also occurred the discontinuation of the open-drop technique of anesthetic management. In its place we turned to an enclosed system of administration of gases and vapors, or a non-rebreathing technique, both methods offering the advantage of enabling the anesthetist to assist the respiratory effort of the patient.

With more extensive operations it has been necessary to develop better methods of supporting patients during operation, and improved means of

monitoring or evaluating their condition. Greatly improved apparatus for blood transfusion has been developed, and especial progress has been made in treatment of patients during severe blood loss. Replacement of large quantities of blood has involved high mortality in the operating room. This has almost entirely been overcome by adoption of several important precautions which include correction of the acidity of bankblood by addition of buffering agents (trishydroxy methylaminomethane and sodium bicarbonate), warming the blood prior to administration, and measurement of both the venous blood pressure and arterial blood pressure during such critical procedures.

During the recovery phase, much better care is now administered due to the development of the Recovery Room, where all patients are attended by a special staff of highly trained nurses under the close attention of anesthesia personnel. Complications can be recognized more promptly and treated definitively under such a system, and the advantage in safety to the patient as well as economy of personnel is most rewarding. Children are sent from the Recovery Room to their original Division when the supervising anesthesiologist judges them to be adequately stabilized.

Anesthesia Staff

At present the staff consists of five experienced anesthesiologists, one of whom works on a part-time schedule. Three nurse anesthetists complete the permanent roster. In addition the resident staff usually consists of five to eight individuals either serving a three or four month period of training as an affiliate from a program in a general hospital, or serving a full year in pediatric anesthesia after completing their basic two-year anesthesia residency. Although many of these residents are highly competent, it is a strict rule that one of the senior staff must be present whenever any patient is anesthetized, regardless of the apparent simplicity of the case at hand.

Teaching

Major emphasis is placed on clinical teaching. The wide variety of case material offered in this hospital is unequalled in the country, and we attempt to make the most of it. Residents are allowed to manage virtually all types of patients as soon as they show competence, and under proper guidance it appears that experience is the best teacher. Conferences and discussion groups are held on a weekly basis, and residents usually attend anesthesia conferences carried on at the Peter Bent Brigham Hospital. They are naturally free to attend the many teaching activities conducted by other departments.

Teaching activities of the anesthesia staff also include instruction of medical students, nurses, residents, and graduate students in surgery and medi-

cine. For many years it has been the responsibility of the anesthesia service to teach cardio-respiratory resuscitation to professional personnel throughout the hospital. Activities of the staff also include teaching outside of the hospital. During the past 18 months Dr. Smith has lectured on various aspects of pediatric anesthesia in Vienna, Lisbon, Sao Paulo and Mexico City, as well as 20 cities in North America. He has served as visiting Professor at the Universities of Arkansas, Michigan, and Alabama and the Albert Einstein College of Medicine. He has also served as Assistant Editor of the Survey of Anesthesiology and Director of the American Society of Anesthesiologists. Dr. Crocker and Dr. Adams have lectured at meetings of the Respiratory Therapy Symposium, in which Dr. Crocker has acted as a founding director.

Research

Investigational activity has not been developed to its full potentiality in our department because of space and personnel shortages and because of the moral and emotional difficulties encountered in attempting to test new methods on small children. It is hoped that there will be more space allotted to this department in the buildings now being planned, and that we shall be able to add a trained pharmacologist to our staff who will carry out an organized program of research.

A small laboratory has been organized for blood gas determination, a service which is carried out on a 24 hour basis. This is especially valuable in caring for patients following open-heart operations, but also has been extensively used in treating non-surgical patients with such conditions as hyaline membrane disease, status asthmaticus and gas gangrene. During the past 12 months more than 1,200 blood gas analyses were performed.

Respiratory Therapy

The department of Respiratory Therapy has undergone great development and plays an active part throughout the hospital in attending both surgical and medical patients. As Director, Dr. Dean Crocker has organized an excellent 24-hour service staffed by skilled nurses and technicians who take care of all forms of oxygen therapy, inhalation treatment and management of ventilating devices. At present the department employs 13 ventilators of various types, most of which are in use a large proportion of the time.

Care of patients who are tracheotomized is of much importance since there is great danger of developing infection and/or respiratory obstruction. To keep the airway patent and still avoid contamination is one of the particular duties of the Respiratory Therapy service.

Both Anesthesia and Respiratory Therapy personnel are called for any emergency requiring resuscitation or cardio-respiratory assistance at any time. This

most frequently consists of introducing an endotracheal tube, clearing the air passages of any offending material, and introducing oxygen, while others apply cardiac massage. Such treatment may be brief, or may require prolonged administration using mechanical ventilating devices. Although medical or surgical personnel assume care for underlying pathology, the responsibility for ventilatory management continues to belong to the Departments of Anesthesia and Respiratory Therapy.

Respiratory Therapy Services

October 1, 1965 to September 30, 1966

Use of oxygen tents	4,519
Use of automatic ventilators	1,573
Tracheotomized patients attended	45
Administration of oxygen to patients	11,337
Hypothermic management	166

Anesthesia Residents

September, 1964—June 30, 1966

George R. Gay, M.D. — Missouri
 Howard Spey, M.D. — New York
 Martin Griffith, M.D. — England
 Sara Thompson, M.D. — North Carolina
 Joan Brown, M.D. — England
 Huan-Ting Chen, M.D. — China
 Anthony B. Browne, M.D. — Ireland
 Paul Briant, M.D. — Georgia
 Dawood Yassa, M.D. — Egypt
 Lillian Orba, M.D. — England
 Martha M. Vasquez, M.D. — Peru
 Michael C. Gabriel, M.D. — England
 Sidney Blubaugh, M.D. — Kansas
 David Longson, M.D. — England
 George B. Palmer, M.D. — Massachusetts
 Herbert Blum, M.D. — New York
 Pierre F. Conze, M.D. — Haiti
 Ronald Gable, M.D. — Ohio
 Joseph A. Hunter, M.D. — Massachusetts
 Steffen Bender, M.D. — Germany
 John H. Barsch, M.D. — Michigan
 Harold N. Jones, M.D. — Indiana
 Louis Robbins, M.D. — Texas
 Jan Smith, M.D. — S. Africa
 Nial P. Murray, M.D. — England
 Arthur D. Thomas, M.D. — Michigan
 James P. Monroe, M.D. — Canada
 Sybil W. Woo, M.D. — Hawaii
 Robert B. Bower, M.D. — Canada
 David C. Heyman, M.D. — New York
 Francis R. Taggart, M.D. — New Hampshire
 Dora R. Empson, M.D. — England
 Samuel J. Cornett, M.D. — Ireland
 Kenneth T. Buckley, M.D. — Massachusetts
 Walter S. Guinee, M.D. — Tennessee
 Eli Kaufman, M.D. — New York
 Edgar Bradley, M.D. — Massachusetts

Health services in general are suffering an acute shortage of dentists. Training in all fields of dentistry is failing to keep up with the demands of the population explosion. It is only natural, therefore, that research in the control and prevention of dental disease is being accelerated. In the meantime, however, the dental profession is forced to search for more efficient use of the clinical tools already at hand. For this reason, at Children's Hospital we have embarked on a clinical study of "time and cost" in pedodontic procedures. This study has been sponsored by Local Chapter #380 of the Teamsters Union. In the last two years we have established a modern program of routine dental care for the children under 14 (hopefully to be extended to age 19) for the membership of this Union. Already much has been learned about the efficient use of time and methods which we hope will set an example for the entire profession following publication of these facts. Not the least item of value in this study has been confirmation for the first time of a long suspected benefit in instituting routine care at the earliest possible age and following through with continued care.

After two years, the amount of work done on 100 children was evaluated. The study showed that, on the average, children who were 4 years old when they first saw a dentist needed \$30 of dental care in the two year period. The children in the 5-year-old group required care valued at \$73, 6-year-olds needed \$104 in care, 7-year-olds \$144 worth of care, and 8-year-olds \$169.

The cost figures used by the dental research team were based on fee payments established by the Massachusetts Department of Public Welfare which are about 30 per cent less than a dentist in the community would charge a private patient.

Thus, most parents whose children are not seen by a dentist until they are 8 years old could expect to pay an additional \$170 in dental bills during the first two years of dental treatment. Also we hope to learn from this study if much of so-called "necessary" clinical procedures really contribute to prevention and control. It is our suspicion that we have become burdened with traditional methodology and that the real purposes of control of dental disease and guidance of growth and development can be achieved by less elaborate techniques.

Research Projects

Members of the group in pediatric dentistry are currently engaged in more fundamental research pursuits. One project involves the discovery by one of our staff that immunologically reactive insulin is present in the parotid secretion and that its concentration is a function of the metabolic state of the individual. While only normal individuals have been tested so far, there is reason to believe that abnormal individuals will demonstrate abnormal concentrations of insulin as a result of glucose loads. This

project offers the distinct possibility for application to our pediatric diabetic population.

Other studies on saliva are concerned with delineation of the active site of enzyme action of alpha amylase and research into the protein composition of saliva as it is varied by endocrinopathy.

The continuing study of child populations from emerging nations has enabled one of our staff to hypothesize that the linear hypoplasia of the deciduous maxillary incisors seen in these populations may be a direct result of maternal vitamin A malnutrition. A test of this hypothesis will be initiated during the coming summer in Guatemala.

Another interesting field now being explored by a staff member is in conjunction with the Department of Surgery. Major facial reconstruction has become a promising adjunct to conventional orthodontics. This became a rational extension of our services with the Hospital's acceptance of responsibility for adolescents. This approach to the patient with a facial deformity is finding earlier applications as well, particularly for the 1st branchial arch anomalies characterized by failure of unilateral mandibular growth. The prospect of minimizing total facial imbalance by more than one bone graft to the mandible during growth is being tested. Total advancement of the midface has also been performed successfully on two adolescents with cranial synostosis. These experiences are already being incorporated in the total treatment plan for a variety of problems heretofore handled by orthodontic correction alone.

This last calendar year we have served the public with upwards of 10,000 appointments at the dental chair, 175 house admissions and more than two hundred consultations.

Teaching Activities

We continue to fill four places each year in our house staff with two residencies and two internships. In addition to these we have two fellows from the postdoctoral program in pedodontics at Harvard completing their clinical training with us. This training over a three year period prepares them as candidates for diplomas from the American Board of Pedodontics as well as launching them on academic careers.

We also have established a new opportunity for postgraduate training in pedodontics identified as a Hospital Fellow in Pedodontics. This position has been created in cooperation with the Harvard School of Dental Medicine to fill a need for "refresher" type training for those already identified with the specialty of pedodontics.

We have reason to believe that an expanded activity in our efforts will be encouraged by grants from various sources and hopefully look forward to maintaining a leading place in the field of dental teaching and research.

DIVISION OF LABORATORIES AND RESEARCH

Sidney Farber, M.D., *Chairman*

This is a time of transition from hopes and conceptions to hopes of physical realization of unmet needs within the next five years. Two paragraphs are taken from the 1964 Report because the language employed describes accurately and clearly the philosophy and structure of this Division.

"The Division of Laboratories and Research, established July 1, 1946, as a first step in the expansion of the Children's Hospital into the Children's Medical Center, includes the Department of Pathology, the Clinical Laboratories, and the Division of Infectious Disease Research. The underlying conception was described in terms of the utilization of the techniques of biology, chemistry, and physics applied to the several disciplines of immunology, experimental pathology, pharmacology, physiology, genetics, and biophysics for the solution of problems concerned with the normal and the sick infant, child and adolescent. The routine laboratory requirements of the several clinical services of The Children's Hospital Medical Center are carried out within the Division of Laboratories and Research. This Division, in addition, conducts its own research activities and provides expert professional assistance to the research programs of the clinical departments of the hospital.

"The philosophy underlying the creation of this Division is now being employed to the advantage of the development of the Hospital Center as a whole for the good of the patient, in new endeavors such as the Clinical Research Center and in the plans presently being formulated for the development of research and care on a greatly expanded scale in the field of mental retardation. The realization of such a conception of research and routine within a hospital setting is found in an affiliated unit, the Children's Cancer Research Foundation, which had its beginning in the Department of Pathology and in some of the unfulfilled plans of the Division of Laboratories and Research. In this Foundation, authorities in the sciences basic to medicine and in this case cancer, work individually, in groups or in teams, often in collaboration with medical doctors toward the twin goals of discovering of new means of treatment and hopefully of cure for diseases for which satisfactory treatment is not available, and the generation of new knowledge designed for the prevention or eradication of incurable disease.

No description of the activities of the staff of the Children's Cancer Research Foundation will be given here. All hold titles by affiliation in The Children's Hospital Medical Center and most of these are listed under the Department of Pathology. This Foundation has developed the sciences basic to medicine to

a degree far beyond our greatest hopes of 20 years ago. The Laboratories of Tissue Ultrastructure, Cell Biology, Biophysics, and Molecular Biology, Genetics, Organic Chemistry, and Peptide Chemistry represent pioneer efforts in the Harvard area in many instances and furnish the instructors for Harvard University in some of these fields because similar developments have not taken place elsewhere in the Harvard orbit. For 20 years the Foundation has furnished the Children's Hospital with a large number of experts in the various fields of cancer, and has given laboratory support far beyond that which a general hospital ordinarily can furnish or support. The clinical division of this Foundation, in addition, is responsible for the chemotherapy of cancer in the Peter Bent Brigham Hospital. Its outpatient department cares for hundreds of patients from the Children's Hospital and from the surrounding hospitals, including the Brigham. Plans have been made for a number of years and are rapidly reaching fruition for the expansion of the work of the Children's Cancer Research Foundation with the creation of a Cancer Center for the Adult. Affiliations will be on one hand, as for the past 20 years, with the Children's Hospital and on the other with all the hospitals in the Harvard area. These plans include the construction of a joint radiotherapy facility in common with five neighboring institutions. The Children's Hospital, through the Children's Cancer Research Foundation will have complete access to the resources, facilities, and expert knowledge of a staff which will be developed under the banner of Harvard medicine. This Center will represent a pattern of true community planning and will enrich the Children's Hospital as that hospital has enriched the entire community, including all neighboring institutions.

The Division of Laboratories and Research includes the Research Division of Infectious Diseases, headed by Dr. John F. Enders. These research laboratories are sponsored by The Children's Hospital Medical Center and the Children's Cancer Research Foundation. Their major laboratories are in the Jimmy Fund Building. During the past four years Dr. Enders has served as University Professor at Harvard. His Seventieth birthday recently was celebrated by a magnificent research conference and dinner attended only by his former pupils and present staff. The Foundation has made arrangements with Dr. Enders to continue his research activities for the next 25 years in the Jimmy Fund Building. The following report was submitted by Dr. Enders.

Research Division of Infectious Diseases

In general during the period covered by this report, investigations in this laboratory have fallen into two main groups: (a) those concerned with problems of "ordinary" or "classical" human virus diseases and their etiologic agents; (b) those concerned with viruses as oncogenic agents. Among the

first group the largest proportion of time and effort has been devoted to studies on rubella, measles, and viral hepatitis. In addition, a number of what may be termed "clinico-virological" studies as well as epidemiological investigations have been carried out. The more significant findings of these undertakings are summarized below.

Rubella—(i) Rubella virus has been adapted to growth in hamster cell tissue cultures. Systems of these cells have proved helpful in studies involving the assay of this virus. It seems possible that after adaptation and prolonged growth in such cultures the virulence for man may be depressed. It is also possible that alteration in the biological properties of the virus may ensue permitting adaptation to growth in chick embryo cell. The practical objective of such studies is obviously directed toward the development of an attenuated rubella virus vaccine capable of manufacture in chick embryo cell cultures analogous to attenuated measles virus vaccine.

(ii) A simple and reliable method for the determination of susceptibility to rubella is clearly needed when pregnant women develop the disease or are exposed to it. Accordingly, a heat-inactivated concentrated suspension of the virus has been prepared and will be studied as a skin test antigen in groups of known susceptible and immune individuals. These tests will be carried out by Dr. Robert Warren of the U. S. Public Health Service who prepared the antigen while working in this laboratory.

(iii) Rubella virus has been isolated from the lens or iris or both tissues from four of eight cases of congenital cataract. The agent has also been recovered from three normal appearing infants whose mothers were infected during the first trimester of pregnancy. The virus has been also recovered from cultures of human amnion cells derived from membranes obtained at term from mothers suspected of having had rubella during pregnancy.

Measles—(i) The antibody levels of children included in the first group to be vaccinated with the attenuated measles virus vaccine which was developed in this laboratory have been determined annually since 1958. Determinations done this year show that all 11 of the original 13 vaccinated children who are now available for study still have virus-neutralizing antibody in the blood. This long-term persistence of antibody encourages the view that a single vaccination may induce permanent resistance to exposure in the same manner as an attack of measles.

(ii) It has been reported by others that patients with multiple sclerosis exhibit in general abnormally high titers of measles antibodies. In this laboratory tests for complement-fixing and virus neutralizing antibodies have failed to demonstrate unusual concentrations of these antibodies in specimens of blood and spinal fluid from patients with this disease.

(iii) Viral Hepatitis. A variety of procedures have been followed in attempts to demonstrate the

agents of serum and infectious hepatitis in cell culture systems. None of these has so far been successful. Recently, however, means have been discovered by which poliovirus can be grown in cultures of naturally unsusceptible cells. Attempts will now be made to apply these techniques to the cultivation of the agents of viral hepatitis.

Researches on Oncogenic Viruses

Simian virus 40—(i) Long term experiments on the capacity of this agent to transform *in vitro* cells derived from different hamster tissues have now been completed. It has been found that in addition to kidney cells those from the heart and spleen of newborn and adult animals as well as cells of the whole embryo all transform within a relatively short time after exposure to the virus. In marked contrast, cells from hamster lungs and liver have failed to transform within the same intervals. However, many months after exposure to the virus, lung and liver cell lines in some cases have undergone morphological as well as malignant transformation, but in such lines no conclusive evidence of the persistence of the SV₄₀ viral genome has been obtained as in the cases of the rapidly developing transformations exhibited by the other cell systems mentioned above.

Experiments are still in progress to determine whether the viral genome is indeed still present in these lung and liver cell lines, but perhaps in a more defective or depressed state, or whether the delayed transformation observed represents another example of spontaneous transformation which is known to occur not infrequently in cells propagated for a long period of time. Answers to these questions may well prove to be significant in the ultimate solution of the basic problem respecting the precise role of the virus in the production of malignant change.

(ii) In the experiments with lung and liver cells just mentioned, control cultures not exposed to the virus failed to survive for more than a few passages. Accordingly, it seemed that exposure to SV₄₀ at least stimulated the growth of the cells and enabled them to survive and multiply indefinitely in serial passages. Experiments have been recently completed which demonstrate a growth-stimulating effect of the virus on suspensions of cells prepared by trypsinization of normal hamster living tissues. Apparently then, exposure to the virus rapidly stimulates cell division before any evidence of transformation is presented.

(iii) Progression of oncogenicity in SV₄₀ transformed heart cells has been demonstrated by quantitative assays of cells derived from various passage levels. As passages are continued the number of cells required to induce a tumor when introduced subcutaneously diminishes significantly. However, if passages are continued further, a diminution of oncogenic capacity may occur.

(iv) Variations of a marked degree in oncogenic potential have been observed between different cloned lines of SV₄₀ transformed heart cells derived from the same passage level. It seems unlikely therefore, that the viral genome uniformly present in these clones can be the sole determinant of oncogenic potential.

Adenoviruses—Using strains of Adenovirus 12 of differing "pedigrees", tumors induced in neonatal hamsters have been utilized as a source of viral-transformed cells. These cell-lines, propagated *in vitro*, are under investigation to determine their susceptibility and resistance to both homologous and heterologous viruses, their potential as sources of continuing long-term tissue culture cell lines and their acquisition of new cellular antigens related to virus and/or tumor. Virologic and serologic studies have been undertaken to detect the presence of intact Adenovirus at sites distant from the local tumor *in vivo*, since no virus has been found, nor its infectious DNA, in the tumor cells themselves, or at the injection site a few days after inoculation.

Department of Pathology

The Department of Pathology remains the foundation of much of the clinical activity in diagnosis and evaluation of treatment, in addition to its own research activities which cover many fields, often in collaboration with members of other services of the hospital. The members of this department and those of Radiology interact more with all members of the staff of the Hospital than those of any other department. The routine has been carried out admirably under the direction of Dr. Gordon Vawter, and his two senior associates in the routine laboratories, Dr. Hubert Jockin and Dr. Jules Edlow. They carry an enormous burden; because of their broad interests and deep desire to assist any member of the clinical staff in the solution of a problem presented by a given patient, they perform invaluable service. The Department of Pathology has been understaffed, underpaid, and inadequately housed throughout most of its history. It is hoped that with more enlightened management and the development of new physical resources, this situation will be improved. This situation is traditional in teaching hospitals throughout the country. It is only in those laboratories of pathology in non-teaching hospitals where large incomes are produced in the clinical laboratories and in surgical pathology that salaries in an entirely different range are to be found.

The tradition here, as in so many other teaching hospitals, has been that the pathologist has paid for the privilege of working in an academic institution by accepting financial returns far below those of his clinical colleagues. The discrepancy in some cases is enormous. The trend in academic institutions in many parts of the country is in the direction of a more civilized and decent arrangement for men who are

truly full time. It should be added that the situation of the pathologist is no different from that of the preclinical scientist in the medical school.

The Department of Pathology at the Children's Hospital has been bolstered enormously in its research activities by the fact that the Pathologist-In-Chief and the Scientific Director of the Foundation are one. This situation will change within a few years. The Head of this Department has drawn up plans for assumption by the hospital of its responsibility in the maintenance of a strong Department of Pathology and in the more equitable sharing of the total resources of the hospital with the clinical departments and with the number of new endeavors which have come into being in recent years.

For the past 20 years the Foundation has used its staff, resources and facilities to strengthen the research program of the Pathology Department while pursuing at the same time its own goals in the field of Experimental Pathology. Dr. Betty Geren Uzman and her greatly enlarged staff in the Laboratories of Tissue Ultrastructure have rendered invaluable aid to the staff of the Children's Hospital interested in her field of activity by training people in electron microscopy and working on problems of common interest. During 1966 she and her colleagues in her laboratories, and those in the Laboratories of Molecular Biology and Biophysics gave, for the first time in this area, a series of lectures and seminars entitled "Electron Microscopy in Pathology". These proved a brilliant success and attracted listeners from the entire area and from a number of schools. It may be recalled that the Foundation purchased for Dr. Uzman the first electron microscope in the Longwood area in 1952. There are at present four such highly specialized pieces of equipment and three top professional people in these laboratories, in addition to fellows. During the past two years Dr. Uzman and her colleagues have studied more than 100,000 electron microphotographs in a search for a possible virus in the cells from children with acute leukemia. Her effort was part of a large program divided into several sections.

Dr. George Foley, Head of the Laboratories of Cell Biology, and his colleagues were able to grow for the first time in tissue culture, the lymphoblast from a child with acute leukemia. In another portion of this large program Dr. Richard Adams, Head of the Laboratories of Research Biology, and his staff were able to grow for the first time in any animal the cells from leukemic children. Large tumor masses have been grown after inoculation of the new born hamster and the tumor so produced eventually causes widespread leukemia.

The Foundation has also made available to the Department of Pathology a world authority in the field of endocrine tumor pathology, Dr. Agnes Burt Russfield. Her magnificent Monograph on Tumors of Endocrine Glands appeared a few months ago. Dr.

Elizabeth Jones, formerly Chairman of the Department of Biology at Wellesley College, is completing a long-term research program on experimental diabetes associated with tumors of the pancreas. A large activity in the field of causation of cancer, with particular reference to a search for toxic materials in the environment, the air, or in food is showing important productivity under the direction of Dr. Samuel Epstein.

Dr. Charlotte Maddock who became associated with the Pathologist-In-Chief in 1929, and later became a research associate of the late Dr. S. Burt Wolbach, has been in charge of the Mouse Tumor Experimental Pathology Laboratories of the Foundation for the past 11 years. She has shared her great expertness in experimental pathology and her splendid facilities with a number of members of the Children's Hospital staff, including Dr. Guilio D'Angio and now Dr. Melvin Tefft of the Department of Radiology. Such collaboration has been valuable and productive and has permitted members of the Children's Hospital Staff to join in research for which they had no space or facilities, nor knowledge of experimental pathology.

A few more examples of research in Pathology will be mentioned here. The Herculean task begun by Dr. J. LeRoy Conel in 1931 on the development of the human brain is still continuing. This is a standard work throughout the world. He has just sent to the printers one more volume, representing the eighth in a series. This work should have permanent value because of its nature. Dr. Conel has passed his eightieth birthday. He appears to be as vigorous as ever and his work stands as a landmark in the history of neuropathology and neurology.

At the end of World War II Dr. Jonathan Cohen entered the Department of Pathology after many years of training in surgery, and five years in the Army. He quickly rose to be Chief Resident in Pathology and then took orthopedic training. Dr. S. Burt Wolbach had retired from Harvard Medical School at that time and was an honored member of the staff as Emeritus Professor. Dr. Cohen's research was carried out first as an assistant to Dr. Wolbach until 1954. He has since combined the duties of Orthopedic Pathologist to the Children's Hospital and Orthopedic Surgeon as a member of Dr. William Green's staff. His research carried out through these many years in the Jimmy Fund Building has been the most important contribution in an analysis of the harmful effects of materials which surgeons put into the body, or into joints in an attempt to repair defects or the ravages of disease. He has cooperated with scientists at Massachusetts Institute of Technology, and has won for himself world recognition as an experimental pathologist in the field of orthopedic surgery. His major support over these many years has been obtained through the efforts of the Department of Pathology. He has rendered invaluable

service to the hospital as a consultant, teacher, and trainer of men in orthopedic research and pathology.

In the year beginning July 1, 1965, Dr. Vawter took leave of absence to work in the University of Marburg in Germany in the field of immunology. In addition he brought to that University extensive knowledge of pediatric Pathology, which as a discipline has not thrived in Germany. During this year he gave a great deal to Marburg and received in return the opportunity for special research in the field of immunology as applied to problems in Pathology. During his absence Drs. Jockin and Edlow carried on in a commendable manner.

The following account of the activities of the Department of Pathology was prepared by Dr. Gordon Vawter, who is actually in charge of the routine autopsies and surgical pathology in the Department.

Dr. Vawter's Report

The department welcomed the special interest and talents of Dr. Richard VanPraagh as Cardiac Pathologist, late in 1965, and established a Cardiac Registry in specially converted and refurbished laboratories in the previous photographic laboratories and offices of this department.

Also the department was strengthened by the presence of Dr. Rananavare of India, sponsored by WHO.

Studies, completed or in progress, include:

1. Hepatic injury produced by lasers (Dr. Edlow in collaboration with Dr. Fine of Northeastern and Mr. Kopito of CHMC).
2. Review of duodenal biopsy experience (Dr. Edlow with Drs. Gupta and Gaffey).
3. Tumor effects of oxygen toxicity (Dr. Gaffey in collaboration with PBBH).
4. Studies of oxygen toxicity in lungs (Dr. Jockin in collaboration with Dr. Bernhard).
5. Pathologic findings in adult cystic fibrosis (Dr. Vawter in collaboration with Dr. Shwachman and Dr. Kulezycki).
6. Electron microscopy and immunology of renal biopsy (Dr. Duquella in collaboration with Dr. F. Fellers and Dr. Uzman and Dr. Rosen).
7. Immunologic studies of laboratory parasites (Dr. Nkrumah in collaboration with Dr. Rosen).

In addition to collaboration of Dr. Gilles and Dr. Uzman, this year was particularly valuable in bringing the power of the electron microscope to bear upon problems of general pathology.

The department processed 2708 surgical specimens, 259 consultation specimens and performed 321 autopsies. As concerns the autopsies, cordial relations continue with the Medical Examiner and with the Wrentham State School.

Laboratories of Neuropathology

The following brief account given by Dr. Floyd Gilles, Neuropathologist, does poor justice to the contribution that he has made to the Children's Hospital and to the Longwood area hospitals in the field of neuropathology. His work has proved to be of high caliber. His training as a clinical neurologist has added to the importance of his opinions in discussions with neurologists and neurosurgeons. He is training young people in pediatric neuropathology and has given invaluable help to the Department of Pathology of the Peter Bent Brigham Hospital. His figure of 350 brains examined in one year points to enormous diligence. The Laboratories of Neuropathology will grow in the next few years when the required support and space are made available.

The work of Dr. Gilles will form one of the foundations on which the new research building in the field of neurosciences will be built.

Additional cases have been added to the study on "Selective Symmetrical Neuronal Necrosis of the Mesencephalic and Rhombencephalic Tegmentum in Cardiac Arrest". These include:

Fine structure of the isocortical axodendritic synapse (with Dr. B. G. Uzman)

The effect of chronic illness in childhood on the deposition of globus pallidus pigment (Histochemistry, Ultrastructure and Statistical Study).

Histochemistry and electron microscopy of the globules in neuraxonal dystrophy (with Dr. B. G. Uzman and Dr. T. Hedley-Whyte)

Histochemistry and electron microscopy of the storage globules in thalamic neurons in Morquio's Disease (presented at the American Association of Neuropathologists meeting in Washington, June, 1966).

Morphological aspects of Rubella Encephalopathy.

Histochemistry and electron microscopy of subacute Necrotizing Encephalopathy of infants and children.

Morphological abnormalities of the brain in Trisomy D and E.

Posterior fossa ependymal diverticuli as a cause of neonatal hydrocephalus (with Dr. F. Rockett)

Posterior fossa subdural hematoma as a cause of neonatal hydrocephalus.

Reactions of third trimester fetal rat brains to insult.

Approximately 350 brains were examined in autopsy, and 23 consultations were held.

Cardiac Pathologist

The latest addition to the Department of Pathology, Dr. Richard Van Praagh, who has been appointed cardiac pathologist, represents an important landmark in the history of cardiology and pathology in this hospital. Dr. Van Praagh was trained as a pediatrician, a clinical cardiologist and a pa-

thologist, both here and in other institutions. He came from the great Congenital Heart Center in Chicago where he was Associate Director. He brought with him an authoritative knowledge of congenital heart disease, and a deep devotion to a field in which there are very few experts. This field, however, represents the most important part of cardiology in infancy and childhood, and also of cardiac surgery. He is a part of the cardiovascular center for children, under the Chairmanship of Dr. Robert Gross and the Associate Chairmanship of Dr. Alexander Nadas. Dr. Van Praagh's descriptive studies are being augmented by experimental pathology in the field of embryology. His research program has as its goal the production of congenital malformations of the heart so that greater information may be at hand to assist in the prevention. He is working in impossible quarters and looks forward with great hope, as do so many others, to the completion of research facilities for experimental pathology in the new research building.

Department of Clinical Laboratories

Dr. Harry Shwachman has continued as Director of Clinical Laboratories, which carried out more than 200,000 determinations in one year. In quarters greatly overcrowded, he conducts also a large part of his research in the field of cystic fibrosis where he is an acknowledged authority. It is expected that when the clinical services building is completed his laboratories will be moved, and hopefully there will be space adequate for the enormous productivity of these laboratories.

The major areas of investigation continue in the field of cystic fibrosis, celiac disease, disaccharidase insufficiencies, and problems of the gastro-intestinal tract disorders in infants and children. We have also continued our interest in heavy metal and trace mineral disorders which, to a great extent, have been made possible by Mr. Louis Kopito. The laboratories are also continuing studies on a syndrome first described a few years ago, which is characterized by failure to thrive, pancreatic insufficiency, bone marrow hypoplasia in the absence of pulmonary disease and in the presence of normal sweat tests. In addition we are concerned with infections, especially those caused by *Pseudomonas aeruginosa* and have been responsible for the administration of colymycin intravenously in an attempt to evaluate its effectiveness. At present particular attention is being paid to salt crystallization from patients with cystic fibrosis. We are also studying the metal distribution and have provided material for Dr. Reas to explore the effect of drugs on the sweat gland function.

Dr. Mahmoodian is working on a more specific test for trypsin and chymotrypsin in stools; one which could be performed in most clinical chemistry laboratories without complicated equipment. Another

problem being investigated is the response of the sweat glands to 9 alpha fluorohydrocortisone to differentiate adults who have elevated sweat electrolyte values and in whom the diagnosis of cystic fibrosis is suspected or claimed.

During the past year, in collaboration with Dr. Sturgis of the Peter Bent Brigham Hospital, we have been studying the cervical mucus of adult patients with cystic fibrosis as well as a group of normal women throughout the cycle, to determine the alterations that take place in the composition of mucus during the cycle.

A number of other phenomena are under continual investigation, such as bacteriologic problems in relation to pulmonary infection, with Dr. George Foley; the surgical complications other than meconium ileus with Dr. Samuel Schuster as our main collaborator; the clinical problems of nasal polyps with Dr. Carlyle Flake; the problem pertaining to the staining of teeth as a result of tetracycline therapy with Dr. Stern (now working with Dr. Glimpser).

Other current studies of considerable interest include the possible detection of lead poisoning by the examination of hair. Not only would this type of analysis help determine the duration and time of the lead poisoning, but it would also open up the possibility of detecting cases of lead poisoning in a high incidence community.

Dr. Morris Green has made contributions to clinical biochemistry. Leucine aminopeptidase levels (LAP) have been determined in the sera of patients with diabetes mellitus. Elevated LAP levels have been found in diabetes with complications. Uncomplicated diabetes gave essentially normal levels. This work was done in collaboration with Dr. Reece at

the Joslin Clinic. Dr. Green's laboratory found that in meconium ileus the meconium plug contained large amounts of serum proteins notably albumin. It was believed that lesser amounts of protein might be found in meconium of patients with cystic fibrosis where the lesion had not progressed to the meconium ileus stage. A study of 150 meconium extracts from siblings of patients showed a high proportion (over 90%) of positive reactions, that were later diagnosed as owing to cystic fibrosis. The test was made with trichloroacetic acid. Unfortunately it was complicated and uncertain. In collaboration with Dr. Joseph Ziches of Chicago a simple immunological slide test was worked out and over 500 meconia were tested with negative results. In a series of 10 siblings of patients with cystic fibrosis, positive slide tests corresponded with subsequent diagnoses of cystic fibrosis. The slide test is sensitive to a dilution of serum of 1:100,000 or more. In spite of this sensitivity, no false reactions were encountered in the 500 controls. Tests negative by the above described TCA method were found to be positive by the slide test. This method is simple and rapid. However, in a few instances, positive results were obtained with patients not having cystic fibrosis.

Department of Clinical Laboratories
Tests Performed—1966

	Inpatient	Outpatient	Totals
Bacteriology	19,872	22,570	42,442
Chemistry	42,985	20,831	63,816
Hematology	53,992	20,401	74,393
Urines	13,328	3,957	17,285
Stools	1,721	369	2,090
			200,026

DEPARTMENT OF MEDICINE

Charles A. Janeway, M.D., *Physician-in-Chief*

The past two years have been notable for a number of trends, which have had an important impact upon the department.

First, the burst of new construction and the prospect for the realization of plans, which had been but dreams for many years, has given a real lift to the morale of the staff.

Second, the combination of the open-door admission policy pursued by the hospital administration, the good care offered by the hospital team, and the tremendous need for medical care by the mass of the city's population for whom doctors are not available, has steadily increased the pressure for service upon our clinical staff till it has often been close to the breaking point.

Third, our efforts to strengthen the staff, combined with the drive towards specialization within pediatrics headed by the oncoming group of able younger full-time physicians, has strained the hospital's limited office and potential laboratory space to the limit.

Fourth, the development of interdepartmental programs of care, training and research in such fields as Cardiology, under the leadership of Drs. Gross and Nadas, and Mental Retardation, through the efforts of Drs. Barlow and Berenberg, has attracted new funds to make it possible to strengthen our staff in these important areas of growing clinical and research activity.

Finally, the rapid advances being made in pediatric research, and their successful application by public health authorities and private practitioners in the community, have so radically altered the nature of pediatric practice and of the clinical problems requiring care that they are forcing us constantly to restructure our program of education and training.

Within the hospital, this has been a period of intense activity and vigorous growth, of inevitable stresses and strains; but also a time of excitement and promise for the future. For the progress which is underway, we of the staff owe a great deal to many people: to the host of friends of the hospital, whose generosity in the annual December drives provided the financial resources to begin to implement the development program; to the President and Trustees, who have been willing to move forward in these uncertain times under the able administrative leadership of the General Director and his staff; to the Chairman of the Staff, whose vision of the total potentialities of The Children's Hospital Medical Center and intimate knowledge of federal programs of support for research and training has played a major role in initiating many of our forward moves; and, finally, to those members of the hospital team upon whose daily devotion to their tasks the hospital's reputation depends—house officers, nurses, social workers, technicians, secretaries, and the large number of other employees, whose essential support is apt to be taken for granted, and last, but not least, the

many volunteers who give their time to the hospital, and do so much to maintain the special quality of its service to children.

Ambulatory Services

A major shift of recent years has been the growth of the ambulatory services of the hospital. This is very apparent from a glance at the statistics in Table I. Approximately half of all clinic visits are to medical clinics. During the past 20 years the number of recorded visits to the various medical clinics has risen three-fold; it has doubled in the past 10 years, risen by 44 per cent in the past 3 years, by 40 per cent in the past 2 years, but only by 5 per cent during the past year. This tremendous growth is mainly due to the enormous expansion of Medical Emergency Clinic attendance, which soared from 5,506 visits annually 10 years ago to 38,347 visits last year. This indicates the tremendous need for medical care by the urban population, which tends to have the high rates of illness associated all over the world with poverty, poor housing, crowding and lack of knowledge concerning health, as well as the shortage of physicians in the core city. The patients who come consist of two groups—a minority with true medical emergencies; and the vast majority with illnesses, which are either preventable or which could be treated in a doctor's office were one existent in the neighborhood. It is our hope that, with the development of programs of comprehensive maternal and child care now being planned in the city under the new federal legislation passed with the "Medicare" bill, the rather unsatisfactory piecemeal care for episodes of illness given in our Emergency Clinic (as well as in many other hospital clinics in the city) will be replaced by more adequate combined preventive and curative care given with continuity to mothers and their children from a "satellite" clinic in their own neighborhood, so that the high morbidity rate in these urban poor families can be reduced. Then the Emergency Clinic can become a place primarily for the management of truly urgent medical problems, while we can concentrate separately upon the operation of a model health care program in a portion of the city where our trainees can participate in comprehensive pediatric practice and where research upon the problems of family medicine can go forward.

A second factor in the growth of the ambulatory services has been a moderate rise in visits to the Special Medical Clinics between 1962-63 and 1964-65. This increase is due both to the initiation of a number of new special clinics to meet new needs, and to the accumulation of an increasing load of cases of chronic disease requiring long-term medical supervision in the established clinics. Here, more than almost anywhere else, the hospital is serving an integrated role in the total pattern of medical care

for this region. The day-by-day care of most of these chronically ill or handicapped children is provided by physicians in their own communities, while the long-range program of management, guided by periodic re-evaluation of the patient in our clinics or wards, is directed by those with extensive clinical experience with diseases which are rare in any one physician's practice. At the same time, gathering together a large group of patients with a common problem into a single clinic has other advantages, such as group therapy by parents for one another, the opportunity for research upon the treatment of the disease and observations upon its long-term natural history, and the teaching of physicians and other health workers about the disease in a short space of time. The small rise in the total number of visits during the past year may represent a leveling off of the demand for care or may simply reflect the fact that our clinic facilities and personnel have reached the saturation point. What happens when we move into the new out-patient building this summer will tell the story.

As medical treatment improves for conditions which are usually discovered in early life, such as Congenital Heart Disease, Cystic Fibrosis, or the Adrenogenital Syndrome, and as more and more patients grow up, we are called upon to provide a smooth transition from care in a strictly pediatric setting, to care in a setting better adapted to adolescents, and ultimately to care by physicians familiar with adults.

The development of new clinics, like the PKU Clinic (a joint venture of the hospital and the Massachusetts Department of Public Health), the Genetic Clinic, the joint Medical-Orthopedic Arthritis Clinic, the Hemophilia Clinic, or the Pulmonary Disease Clinic, reflects the growth of specialization within the Staff as well as the new needs and opportunities which result from medical progress.

Another striking change in our ambulatory services is the shift in the type of patient being referred for consultation to the General Medical Out-patient Department. The number of visits to this clinic has remained almost constant for the past ten years, but there has been a steady change in the type of case. Physicians and community agencies refer patients to us for help with clinical problems with which they do not feel trained to deal effectively, or which may represent early handicaps for which special treatment may be needed. A study by Dr. E. G. Lund, Jr., one of our residents, of 1,496 new patients seen in a six-month period in the Medical Out-patient Department showed the distribution of diagnoses shown in Table II. The overwhelming preponderance of children suffering from functional disturbances involving neurological and psychological mechanisms is clearly apparent; this finding is given added weight when it is appreciated that psychosocial factors play an important role in many patients with allergy,

respiratory complaints or disturbances of growth and nutrition. These figures are affected by two mechanisms of selection: (1) referral by the outside physician, who himself will treat the diseases he understands and can manage, and (2) screening of patients who come directly to the hospital by house officers in the Medical Emergency Clinic, who also treat those cases they can readily manage—the acute infections and simple allergic, dermatologic, gastrointestinal and renal diseases—while referring the more difficult diagnostic problems to the Medical

Outpatient Department

A similar study of patients coming to the Adolescents' Unit also revealed a high proportion suffering at least in part from functional and emotional disorders. These figures indicate the need for much more intensive study of ways to improve the training of house officers who intend to enter practice and the post-graduate instruction of practitioners so that they can deal more effectively with the psychological aspects of disease. They also underscore the necessity for intensive research upon child development, learning, and behavior so that the pediatrician may ultimately have knowledge which will equip him to play the same key role in the prevention of emotional disorders that he has already played in the prevention of disability and death from infectious diseases.

The increasing divergence between ambulatory pediatrics and in-patient pediatrics has important implications for the training program of the department, which will be discussed below in the section on pediatric education.

During the past two years many improvements in functioning of the Medical Out-patient Department were made by its Chief, Dr. Thomas E. Cone, Jr., who left in June, 1966, to become Professor of Pediatrics at Southwestern Medical College of the University of Texas, Dallas. He had won the affection of all at this Hospital, and his contributions to improved pediatric care, to teaching, and to the welfare of house officers, are sorely missed. During the summer of 1965, with the able assistance of Mrs. Cone, a trained nurse, Dr. Cone organized and carried through a major extra undertaking, the examination of a large number of preschool children enrolled at the beginning of Project Headstart in Boston.

In-patient Services

A few years ago, the Trustees were concerned with the low occupancy rates in the hospital. This is no longer a problem. All the beds in the general medical services have been used as close to capacity as possible on a service which must care for patients of both sexes from newborns to teenagers with a wide variety of diseases, many of which require individual isolation. Although the number of admissions in the Department of Medicine has remained relatively

stable during the past three years, bed occupancy in both the short-term and long-term divisions has risen, so that there has been a significant increase in hospital days of care since 1963-64 (see Table I).

It is the general impression that the admissions have represented more serious and acute illnesses than before, so that the load on house officers, nurses, and all supporting personnel during the past year has been heavier than ever before. This is reflected in the longer average length of stay and in the rise in mortality due to infections (see Table III). In general, the major causes of death and the over-all mortality rate on the Medical Service have not otherwise changed significantly during the past two years, since there have been no dramatically successful new forms of treatment introduced during that period. The rank order of the different causes of death probably represents the hospital's reputation for care in special fields and hence its attraction for cases of certain serious diseases with high mortality, such as neoplasms, congenital heart disease, and cystic fibrosis. Another cause of the longer average stay in the hospital and the rise of deaths from infection is the extent to which there has been an increase in the number of children with acute illnesses coming from very poor homes in the city, who have been admitted from the Medical Emergency Clinic and who cannot return home quickly for convalescence. This very heavy load of service on the wards and in the Emergency Clinic made it necessary to increase the number of house officers last year, so that there are now 12 instead of nine first-year house officers (interns and junior residents) on the Medical Service.

Several new developments have contributed greatly to what we feel is better total care for the patients admitted to the General Medical Services. The first is the creation of a new position on the staff—Assistant to the Physician-in-Chief—to take over the functions formerly delegated to the Chief Resident. Dr. Sherwin V. Keyv, Associate Director of the Blood Transfusion Service of the Hospital and a former Chief Resident, who is in his second year in this new post, has done a magnificent job in supervising the work of the House Staff in the care of patients and in their relations with practicing physicians in the community, as well as in organizing our teaching conferences. His keen interest in the welfare of both patients and house officers, his intimate knowledge of the hospital, and his devotion to its purposes has greatly strengthened the department.

A second major improvement has come in the better integration of all facets of the care of hospitalized children through creation of the position of Coordinator of Patient Care. This position was first filled by Dr. Helen Glaser. When she was forced to leave for the West Coast, Dr. T. Berry Brazelton, a former Resident, an experienced practitioner, and a member of the Staff, took up the work Dr. Glaser had initiated. Dr. Brazelton has in-

augurated a series of regular weekly conferences on each of the Medical Divisions, which have brought together the personnel involved in the care of patients and their families—pediatricians, psychiatrists, nurses, social workers, and play therapists—to discuss the total management of individual patients. These sessions have not only done much to improve the care of individual patients, but have had great value as interdisciplinary teaching exercises. As Dr. Brazelton's reputation has spread, he has been invited to conduct similar sessions on other services of the hospital. His leadership has been effective because of the receptiveness of the Nursing Service to changes in ward routines to meet the emotional needs of children, the interest of the Department of Social Service in improving these aspects of care, and the enthusiasm and splendid work of the staff Mrs. Patterson has assembled on the Children's Activities Service.

A third important development has been the organization of the Respiratory Therapy Service by the Department of Anesthesiology. A number of lives have been saved and the care of a far larger number of patients improved by the immediate availability of highly skilled doctors and technicians familiar with resuscitation procedures and the care of patients whose lives depend upon the maintenance of adequate ventilation when their own ability to carry out the function of respiration has temporarily ceased.

Fourth, the splendid support given the Medical Service by the Department of Radiology, the Department of Pathology, the Division of Clinical Laboratories, and the Transfusion Service deserves acknowledgment. Without the availability at all hours of the expert services which our professional and technical colleagues in these fields provide, proper care of our patients would be impossible. All this indicates, once more, the extent to which modern hospital care is a team effort, in which the role of the physician is to coordinate and utilize as wisely as he can the special skills of a large number of specialized individuals and the complex and expensive facilities provided by the institution.

Harvard Medical School Students

During the past two years, a new curriculum for the last half of the medical school course has gone into effect at Harvard. This has involved several major changes, the first of any significance for a period of many years:

- 1) Elimination of the nine months' third-year program. During this time the student formerly was offered a series of early morning lectures by all clinical departments, followed during the rest of the day by introductory practical work and reading in each of the clinical subjects in succession. Every student used to spend five and one-half weeks at the Children's Hospital, with the time divided between pediatric medicine, pediatric surgery and orthopedics.

This has been replaced by a 12-week course, "Introduction to the Clinic", given at the beginning of the third year, which has as its objective the preparation of students to function as clinical clerks. The class is divided into four groups, assigned to the Massachusetts General Hospital, Boston City Hospital, Beth Israel Hospital and Peter Bent Brigham Hospital. The Children's Hospital is responsible for instruction of the Beth Israel and Peter Bent Brigham students in the special techniques of pediatric history-taking and examination of children. This has been done by taking each of these two groups for a two-week period, at or near the end of the course. Dr. William Berenberg has organized the pediatric aspects of this course exceedingly well during the past two years, and the students' comments have been generally favorable. The four weeks during which these students are at the Hospital is a period of great strain upon the personnel and facilities of all departments who cooperate in the course, but it has meant that every student at the Harvard Medical School will have spent at least two weeks at the Children's Hospital.

2) Condensation of all required teaching of the clinical subjects into a one-year period from December of the third year to December of the fourth year, known as the "Principal Clinical Year." During this period, the Department of Pediatrics at CHMC takes on a new group of 12 students every six weeks, except for a total of four weeks set aside for vacation. This six-week course gives us almost the same number of hours for pediatric teaching as there used to be in the third and fourth year courses, but is necessarily more condensed and intensive. After a number of trials, we have settled on a program which seems to satisfy both students and faculty. It provides two weeks of clinical experience in the Ambulatory Services of the Hospital (Child Health, Medical Emergency, and Medical Out-patient Department) and four weeks of service on the wards with one of our clinical teams. Surgical and specialty instruction is given on Saturday mornings. Perhaps the major casualty of this new curriculum is neonatal pediatrics, which should be combined with the six-week course in Obstetrics and Gynecology at the Boston Lying-In Hospital, but which has been largely crowded out of their schedule.

3) A final five months' elective period at the end of the fourth year. This permits each student, with the help of a faculty advisor, to develop an individual program. The program may vary from an experience in depth in a particular area comprising research and/or clinical experience, to a diversified program of separate one-month clinical courses, or even to repetition of basic courses if the student has displayed marked weaknesses in his required clinical work. The principal difficulty in this program is that, with only five months', instead of the former twelve months' option for scattered electives, some students

cannot get into the elective courses they desire. Dr. Nadas has acted as coordinator for elective courses.

The interdepartmental and interhospital elective course in Family Health Care, in the development of which our department took a leading role, and which was made possible by grants from the Commonwealth Fund and subsequently from the U. S. Children's Bureau, seemed destined to be eliminated by the new curriculum since it required 9-12 months' continuity to be effective. However, through the help of the Curriculum Committee, it has been possible to offer it for the whole fourth year; it has been fully subscribed and enthusiastically taken by a group of 19 students this year.

All in all, from the standpoint of the Department of Pediatrics at the Children's Hospital, teaching under the new curriculum has been considerably more satisfactory than under the old one. The fact that our students continue to rank among the top three schools in performance on the National Board Examinations in Pediatrics, despite less time devoted to pediatrics in the curriculum than in most other medical schools, indicates that our superior students are at least receiving adequate instruction. Our objectives are not to teach pediatrics completely, but to train students to use their knowledge of medical sciences in the prevention and diagnosis of disease in children, and to give them sufficient exposure to pediatrics, its challenges and rewards, to permit them to make an intelligent choice of their future careers. Although this new curriculum has been criticized by many people, both those who bemoan the passing of the "good old days" and those who feel it is not liberal enough, it represents a "great leap forward" in breaking out of the rigidity of the old curriculum and thus permitting further evolution to a more satisfactory plan during the coming years.

Post-graduate Courses

Post-graduate courses are offered primarily through the Office of Courses for Graduates, Harvard Medical School, but a vast amount of clinical instruction is given by individual staff members through lectures at other hospitals and through our own weekly Grand Rounds and Clinico-Pathological Conferences. Acting on a suggestion from Dr. Gross, the Hospital has offered a five-day intensive course on Advances in Pediatrics for practicing pediatricians each year, usually in September. This has become very popular, and attracts from 50 to 100 physicians annually from all over this country and Canada. The Adolescents' Unit has likewise run a very successful one-week course in Adolescent Medicine each spring.

In addition, two long-term (six months or more) courses have been offered for small numbers of students, primarily from other countries. Pediatrics 2, a structured course planned to emphasize the scien-

tific basis of pediatrics, in which students from the developing countries tend to be especially weak, had its best year in 1964-65. Then Dr. William B. Macdonald, Professor of Child Health at the University of Western Australia, who had spent several periods as WHO consultant in Thailand and who had worked in Uganda, was here as a Commonwealth Fellow and made a tremendous contribution through a weekly seminar. He helped the students focus what they were learning on the major health problems of their own countries. This course has been omitted since that time because of lack of suitable personnel, but an opportunity to study at the Hospital has been offered through Pediatrics 2A, a less structured course, which makes less demand upon our staff.

Formal Instruction to House Officers

This is an area in which, as the load of service and patient care has increased, our educational program has slipped. We have not succeeded as we would like with formal instruction, particularly in the areas in which our house officers tend to need most help, namely with the psychological aspects of child development and pediatric care. They probably learn most through their experiences in the Family Health Program. There, they are frequently faced with the necessity for managing the psychological problems of patients in families for whose care they are responsible, and have ready access to psychiatric guidance and supervision from pediatricians who are sophisticated in the psycho-social aspects of pediatrics, with which they will have to deal so much when they enter practice.

Pediatric Training

Post-graduate training in pediatrics and its specialties is a major activity of this Department, and is intimately related to its service and research programs, in which the trainees learn through supervised clinical and laboratory activity with gradually increasing responsibility. Although professional educators tend to decry this apprentice system of training in medicine, there is no substitute for the hard-won lessons of direct experience under the watchful eye of sympathetic and helpful supervisors. Furthermore, a university hospital which makes teaching its primary purpose instead of the provision of exemplary care for its patients, as some medical school deans have expressed it, seems to us to be a poor place to train future physicians, whose mission is healing and the prevention of suffering.

The greatest forward step in recent years has been the increase in salaries for house officers. This has not only rectified a great injustice to a group who increasingly have had to carry the increased burdens created by the shortage of physicians, but it has removed what was becoming an important economic barrier to attracting the most able house officers to the Children's Hospital for training.

The basic pediatric training program we offer consists of two years, during which the house officer is directly responsible for the care of patients. The first year, which may be entered either directly from medical school or after a medical or rotating internship elsewhere, consists mainly of general pediatrics. The second year, for those who have had a year of pediatrics here or elsewhere, gives more experience in the pediatric specialties. At the conclusion of this two-year program, the physician in training will have had an extraordinarily intensive experience with the diagnosis and treatment of serious disease in children. At the same time, through limited assignments to the Out-patient Department, and through responsibility for the complete pediatric care of several families in the vicinity of the hospital, he will have had an opportunity to learn something about family pediatric practice.

The third year of pediatric training, like the last phase of medical school education, offers a great opportunity for the development of more individualized programs designed to meet the needs of each trainee, particularly now that the recent liberalization of the policies of the American Board of Pediatrics has given this trend official support. It seems to us that this is the point for divergence of the paths being followed by those with academic aspirations and those with a primary interest in practice or in teaching ambulatory pediatrics. We have begun by an increase in the elective time offered to the Senior Residents. This means that in addition to their time spent in supervising the work of the house officers in the three general medical services, the Medical Emergency Clinic and as Admitting Resident, they now each have one assignment as Teaching Resident to the medical students and a period of nearly two months for elective work with any specialty group of their choice. Some men, in their third year of training, have chosen to go directly into fellowship training instead of into a senior residency.

Fellowships offer advanced training in one of the special areas of pediatrics, and cover a wide range of fields from those strongly oriented toward practice (e.g. psychological pediatrics, family health or adolescent medicine) to those much more directed toward full-time academic careers (e.g. cardiology, hematology, genetics, endocrinology, etc.). The availability of multiple fellowships in these areas is largely dependent upon training grants from government agencies—the National Institutes of Health, the Children's Bureau—and from voluntary health agencies. Fellowships in the specialties of pediatrics have multiplied enormously during recent years. Both the good care we can offer our patients with such diseases, as cystic fibrosis or congenital heart disease, and the research productivity of our specialty groups depends to a large extent upon the presence of the extremely able young pediatricians and internists attracted here for training by the wealth of clinical material, the

excellent staff, and the strength of the hospital's supporting services.

For some years we have offered several different fellowship programs designed to meet the special needs for training of those individuals, who, with a sound base in pediatrics, internal medicine or general practice, are planning careers in family general or pediatric practice or who plan to enter the rapidly growing academic fields of teaching and research in ambulatory care. These programs are in Family Health Care, in Adolescent Medicine, and, through the Department of Psychiatry, in Psychological Pediatrics. In addition, three residencies have been offered in Ambulatory Services, primarily the Medical Emergency Clinic and Medical Out-patient Department. Each of these programs has successfully met the special training needs of a group of individuals, but it is the feeling of the staff that, with the tremendous growth of ambulatory care and the rapid shifts in pediatric practice, a third year residency program should be developed which would combine elements of all these different programs into a more comprehensive program for the final year of training before entrance into practice. Plans are now being developed to this end. Most important for the success of such a program would be the creation of a new position, Chief of Ambulatory Services, to be filled by a distinguished teacher, who would be responsible for coordination of the programs of care, training and research in the various ambulatory clinics as well as the extramural programs, such as the Family Health Care Program, the Comprehensive Care Program for Mothers and Children (Satellite Clinic), and training programs in affiliated hospitals.

Foreign Physicians' Training

A major phenomenon of the post-war era has been the rush of physicians from the developing countries to the United States for training. Most of them come after one or two years of hospital training in their own countries; some, from Korea particularly, come directly after graduation from medical school. They are lured here for many reasons—youthful desire to see the world, genuine desire for better medical training, desire for prestige and the hope of a better job at home, pay as a house officer which far exceeds a professor's full-time salary in their own country. It has been estimated that this country is now using a number of foreign doctors to staff its hospitals equivalent to the annual output of more than 20 medical schools. Thus, while we complain about foreign aid, failure to solve the problems of medical care and health manpower in this country has resulted in our being aided handsomely by those countries which can least afford it. If all these physicians returned to their own countries, superbly trained to meet the massive health needs of their people, and were properly utilized by their own governments, the net result of this vast movement of physicians would be good. Unfortunately a fair number do not return

permanently, many are not properly trained to meet the real health needs of their countries, and often they are not optimally utilized upon their return, but may find themselves relegated to inferior positions by their elders who are less well trained but jealous of their own prestige. This is an extremely complex facet of the major world problem of development, which is fortunately receiving increasing attention by governments and by agencies concerned with medical education.

Because of the reputation The Children's Hospital Medical Center enjoys around the world, and because of the fact that we have been hospitable to physicians from other lands, the flood beats upon our doorstep more than most. This year, the number of inquiries from foreign physicians about residency positions has exceeded anything we have experienced before. At least, with such a volume of applicants to choose from, we should be able to select a particularly good group for training.

The problem of pediatric education and training for physicians from the developing countries is of such major importance that I have devoted both of my sabbatical leaves to the study of child health needs and pediatric education in Asia. In 1956, we were able to spend three and one-half months in India and the Middle East with assistance from the Rockefeller Foundation. Last year I was fortunate enough to receive the Alan Gregg Travel Fellowship in Medical Education of the China Medical Board of New York, which made it possible for us to spend four and one-half months visiting medical schools, hospitals, and child health programs in Korea, Japan, Taiwan, Hong Kong, the Philippines, Thailand, India, Iran, and Egypt. In every one of these countries we were able to meet physicians who had received training at Harvard and The Children's Hospital Medical Center, and to see how they were using that training in public health and medical care programs in practice, in teaching and often in research. The over-all impression was very encouraging. In one way or another these physicians are making important contributions, and, together with physicians trained in other American medical centers, they are raising the standards of medical care and teaching. Students, who had an extremely hard time adjusting to life in an American hospital and who seemed to have very limited ability when they first arrived, or others, who experienced very severe "culture shock" upon their return home after a number of years in the West, are now doing an outstanding job as teachers and physicians. Besides the pleasure of seeing former students fulfilling their promise and of being received with hospitality that puts us to shame, the opportunity to make new contacts with pediatric leaders and to see the rather high level of medical education in many eastern countries will be very helpful in enabling me to assess the potentialities of candidates who seek training with us in the future.

At present we offer opportunities to foreign physicians at several different levels.

1. As postgraduate students. For those who have not been in the United States before, who may have difficulty with language or with our scientific approach to clinical medicine, this provides the best introduction to a program of teaching.

2. As Affiliated Residents. Most physicians from the developing countries get to this country by accepting an internship in a community hospital. After this, the majority are not ready to work in our hectic, busy, complex in-patient service, but require training in general pediatrics under relatively close supervision. The only way we have been able to achieve this is through affiliation with four community hospitals, where the staff takes a real interest in their training (Beverly Hospital, North Shore Babies' and Children's Hospital at Salem, Mt. Auburn Hospital in Cambridge and Beth Israel Hospital). These hospitals provide in-patient experience with newborn infants and general pediatric problems. The resident spends six months in one of these hospitals and six months at CHMC, primarily in our Ambulatory Services. It is this latter six months' period which has become so troublesome, since the kind of patient seeking help in our Medical Out-patient Department presents problems with which even our own best-trained men are having trouble. Efforts are being made to include some ward service, experience in pediatric radiology and a seminar directed towards the problems of public health in the developing countries during this period at the CHMC.

We also receive Affiliating Residents, many of whom are foreign, from the Springfield Hospital, the Rhode Island Hospital and the Roger Williams General Hospital for six months of similar training out of their two-year residency programs.

3. As Residents. A few of the foreign-trained physicians are able to participate in our regular residency program either directly or after previous experience as post-graduate students, affiliated residents or fellows.

4. As Fellows. For those with real academic ability, or those who have had adequate clinical training in the past, fellowships in some special field of clinical research provides the ideal experience. They can take advantage of the hospital's extensive teaching program while learning techniques of care and investigation which they will apply to the clinical problems with which they must deal and from which they must teach at home. Many of our former fellows now hold important teaching positions in pediatrics in various parts of the world.

The most serious problem in the training of the best foreign students is financial. Training programs financed by our own government are generally not open to them, and, in many instances they are forced to work as interns and residents providing medical care for which American physicians are not avail-

able, in order to get an opportunity to work in this country. Our institution needs sufficient funds to support an experienced senior person to oversee the training and welfare of foreign physicians, and a fund which would provide fellowships to a small group of superior men and women of our own choosing from foreign countries for advanced training for academic careers, since they will have the greatest impact on raising the level of medical and health care upon their return.

Pediatric Research

The accomplishments of research are recorded in the list of publications by members of the department. A few of the developments with important effects on the research potential of the department are worth recording.

The total research program of the department was housed for many years in the Laboratory Study Building. The important work of Gamble, Butler, Wallace, Metcalf, Schwartz and others on the regulation of body composition, the basic work of Blackfan and Diamond in pediatric hematology, the pioneering studies of Gitlin and his colleagues on the metabolism of the plasma proteins, and the early clinical studies of Cook upon respiratory mechanics in children were all carried out in this old building before it was demolished in 1964-65. The research activities of the department had outgrown its limited space long before then, but the replacement of its laboratories with splendid temporary quarters just above the Hyperbaric Chamber has resulted in a happy arrangement which greatly facilitates collaboration in training and research between those in Clinical Genetics under Dr. Park S. Gerald, in Hematology under Drs. Diamond and Nathan, in Immunology under Drs. Rosen and Janeway, and in Renal Disease under Dr. Fellers. Not only has cross-fertilization of ideas and mutual intellectual stimulation been greatly enhanced, but the joint use of expensive items of equipment has been made possible. This has been a valuable experience in planning for the new Research Building, where this type of mutual interaction should be greatly increased.

The opening of the General Clinical Research Center under the able Directorship of Dr. John Crigler has provided another facility for the performance of certain types of clinical investigation, which is invaluable in the study of disease processes. The devotion of Dr. Crigler and the splendid staff he has assembled to their task of facilitating clinical investigation in the hospital deserves the gratitude of all who benefit from their efforts.

A particularly strong program of research has developed in the Cardiology Division through the mobilization of new funds which have permitted Dr. Nadas to strengthen his staff in epidemiology, pathology, and physiology.

The field of infectious disease research has been

very strong through the attraction of able young people to work with Dr. Enders on virus diseases. However, bacterial diseases remain a serious problem among hospitalized patients; Dr. David H. Smith, a former Chief Resident, who has spent the past several years in the Department of Bacteriology and Immunology at the Harvard Medical School, has rejoined the department and brings both clinical and scientific knowledge to bear on these problems.

Dr. Schwachman's contributions to the problem of cystic fibrosis and other digestive disturbances in children provide another important focus of intensive research activity which has received international recognition.

Finally, the establishment of a Medical Care Research Unit attached to the Family Health Care Program, which was made possible by a grant from the Commonwealth Fund and which is now supported by a grant from the Children's Bureau, has added two able social scientists to the department. Their presence guarantees sound methodology and significant results in the difficult area of research on the problems of medical care. The type of data being obtained by this Unit is essential for the development of effective systems of comprehensive care for children in our cities.

Reports of Divisions and Special Research Groups Allergy Division

Harry L. Mueller, M.D. — Allergist

Patient visits to the Allergy Clinic for the fiscal year 1964-65 were 3,850 and for 1965-66 were 3,509, and are second only in numbers to the General Medical Clinic. This is not unexpected since various studies have shown allergic diseases to comprise from 15 to 20 per cent of childhood illnesses for which medical care is sought. Allergy consultations in the general medical clinic result in a large number of these patients being treated satisfactorily without referral to the Allergy Clinic. Because of the frequency of allergic symptoms in practice, a number of outside physicians have attended the clinic regularly for instruction in this field.

The drop in patient visits since 1964 probably reflects the Clinic's conservative approach to the use of hyposensitization and use of the newer alum precipitated allergy extracts. These are more slowly absorbed and can be given at longer intervals, resulting in fewer visits with less expense and inconvenience for the patients, and with what is at least equal and possibly greater clinical benefit.

There is improved liaison with house staff and in-patients, partially because rounds are made on house patients by clinic staff twice weekly, and because we have been able to show that this offers improved care for the patient.

Dr. Mueller is Chairman of the Sub-Board of Allergy under the American Board of Pediatrics and, with the combination of his duties in this capacity

and the heavy demands on his time as a speaker and teacher of pediatric allergy at national and international meetings and at other medical centers, it is remarkable how he and his staff are able to give such conscientious service to our patients with allergic disease.

Dr. Mueller is continuing to follow his life-time interest in allergy to insect bites, a field in which he is a recognized authority. Dr. Bailit is working closely with the Department of Anesthesiology in improving the treatment of severe cases of asthma.

Adolescents' Unit

J. Roswell Gallagher, M.D. — Chief

Visits to the Unit continue at between 7,000 and 7,500 per year, with about 1,000 new patients seen, which for the moment seems to represent the capacity of the present staff and facilities.

The educational activities of the Unit continue to be very large. In addition to major publications, such as the second edition of Dr. Gallagher's textbook, "Medical Care of the Adolescent", and an issue of the Medical Clinics of North America devoted to publication of the material presented at the Post-Graduate Course on Adolescent Medicine given by the Unit in 1964, members of the Unit's staff published 22 other papers during the past two years, and gave 67 talks all over this country and Canada to medical, parent and other groups concerning adolescent medicine. Finally, Dr. Gallagher served with great skill as Special Advisor to the Expert Committee of the World Health Organization on the Medical Problems of Adolescents from October 12 to November 27, 1964.

During the period of this report, the practice of holding special clinics for adolescent patients with chronic disease in the Adolescents' Unit was expanded to include an Endocrine Clinic and a Cardiac Clinic. These clinics, directed by a member of the staff of the Endocrine Division and the Cardiology Division respectively, and attended by fellows in Adolescent Medicine and in the specialty, provide a means for combining the skill of the specialist with the general physician's knowledge about adolescent patients.

The Unit has reached out into the community in many ways; through the provision of health examinations for boys at the Charlestown Boys' Club and the Hayden Goodwill Inn, through services of members of the Staff as physicians to educational institutions in the area, and finally through establishment of an adolescent clinic at the Bromley-Heath Boston Health Department Clinic, where the Harvard School of Public Health has been operating a demonstration child health program.

Support for the educational program has continued to come from the Grant Foundation, Inc., and the U. S. Children's Bureau. In addition, Mr. W. T. Grant has been steadily adding from his per-

sonal holdings to an irrevocable trust which will ultimately form a special W. T. Grant Endowment for support of the Adolescents' Unit.

Trainees during the past year included nine post-graduate physicians and two medical students.

Cardiology Division

Alexander S. Nadas, M.D. — Cardiologist

During the past year the long period of caretul building of a strong group in cardiology by Dr. Nadas has borne fruit. The excellence of the clinical work has attracted increasing numbers of patients. The wealth of clinical material, the close collaboration with radiologists and surgeons, and the fine teaching offered in the clinic by Dr. Nadas and his staff and in the physiology laboratory by Dr. Monroe have drawn first-rate candidates to the Division for training. These, in turn, have enhanced the research productivity of the Division to a point where, during the past year, in addition to a training grant of approximately \$70,000 per year, the group has been given a program-project grant amounting to approximately \$210,000 per year to support its total research program. In addition, a Research Career Development has been awarded Dr. Monroe by the National Heart Institute, while Dr. Hugenholtz is the recipient of an Established Investigatorship from the American Heart Association. These new resources have made it possible to strengthen the staff of the cardiac program by adding four new people:

Dr. Donald Fyler, a graduate of the training program in 1957, who has been Cardiologist at the Children's Hospital of Los Angeles and Associate Professor of Pediatrics at the University of Southern California, to join the clinical staff and to direct a new Catheterization Laboratory near the Hyperbaric Chamber with a grant of \$236,156 from the John A. Hartford Foundation, Inc.;

Dr. Richard van Praagh, a former resident in both Medicine and Pathology, who has been at the Hektoen Institute in Chicago, as Cardiac Pathologist;

Dr. Olli S. Miettinen, from the University of Maryland, as Biostatistician and Epidemiologist; and

Dr. Warren M. Gold, a former Chief Resident in Medicine at the Beth Israel Hospital, who had received extensive research training at the Cardiovascular Research Institute of the University of California at San Francisco, as Pulmonary Physiologist.

Each of these able individuals brings special abilities both to the program of research involving the cardiovascular system, and to the hospital as a whole. The full-time staff of the Division now numbers ten, with several part-time members; there are nine trainees and two research fellows. Of the trainees graduated during the past two years, two—Dr. Grant

LaFarge and Dr. William Plauth, Jr.—have remained on our staff, two are in advanced cardiology training elsewhere, and four have become pediatric cardiologists in other academic institutions.

Quite naturally, this growth of cardiology, which parallels the advances being made in the surgery of congenital heart disease under Dr. Gross's leadership, has put tremendous pressures upon the institution for space, which must be satisfied in the near future if we are to take proper advantage of the talent which has been brought together in a pediatric cardiology program which we believe has no equal anywhere.

It is impossible to list all the accomplishments of this group. They are much in demand as lecturers at international, national, and local medical meetings. A steady flow of publications attests to the contributions which the group is making to the diagnosis, prognosis, therapeutic management and basic understanding of congenital heart disease. The research program encompasses the following areas of activity: a collaborative study with other institutions of the natural history of congenital heart disease (Dr. Nadas and Dr. Plauth) to obtain essential base-line clinical data against which the risks and accomplishments of surgical therapy can be evaluated; correlation of the electromotive forces produced by the heart and its hemodynamic function (Dr. Hugenholtz); collaboration in the artificial heart program of the Department of Surgery (Dr. LaFarge); the factors determining the performance of the heart muscle (Dr. Monroe); the development of fiberoptic systems for recording hemodynamic changes inside the heart by instruments and motion pictures (Dr. Walter Gamble); correlation of clinical cardiac disease with morphologic changes in the heart and studies of their embryologic origin (Dr. van Praagh).

Since lungs and heart form a closely interrelated physiologic unit, the Pulmonary Physiology Laboratory has been placed in the Cardiology Division, although by necessity it is located far away in the basement of the House of the Good Samaritan Building. Dr. Gold's research is concerned with the basic problem of the regulation of the pulmonary circulation. His associate in the Laboratory, Dr. M. E. B. Wohl, serves as a link with the Department of Physiology of the Harvard School of Public Health, which has always given us strong backing in respiratory physiology. She has been studying techniques for measuring airway resistance in infants and small children. The presence of this able team in the research laboratory has provided scientific support for the Respiratory Therapy Service, and they have been extremely helpful in assisting the house staff in the management of difficult patients with respiratory problems. A Pulmonary Disease Clinic has been established to permit them to follow a selected group of patients with unusual pulmonary problems.

Child Health Division

Joel J. Alpert, M.D. — Chief

The Child Health Division of the Children's Hospital Medical Center is one of five General Medical Divisions in the Department of Medicine. The major teaching, research and patient care activities of this Division reflect increasing concern on the part of both hospital and medical school with the health of the community, particularly of those families who use the facilities of the hospital.

The Child Health Division is responsible for the teaching of Harvard Medical students, pediatric residents, and post-doctoral fellows and carries a very heavy teaching load. All Harvard Medical students taking "Introduction to the Clinic" at The Children's Hospital Medical Center spend one day with the Division Staff. All those taking "Pediatrics" in the Principal Clinical Year at the Children's Hospital also spend six half-days in the Unit learning about growth and development, health supervision, immunizations, nutrition, working with the health team, and discussing some of the social and medical issues in the provision of medical care. Each student spends a half-day in the private office of a pediatrician on the staff of the Children's Hospital Medical Center.

Attempts were made by a number of medical schools and teaching hospitals after World War II to broaden their educational programs for physicians in training by extending the activities of the medical school or hospital into the community. These programs, although differing in name, have shared a common goal of orienting medical care to the patient rather than to the disease. A Family Health Care Program was established in September, 1955, at the Harvard Medical School and The Children's Hospital Medical Center with the assistance of a grant from the Commonwealth Fund. In July, 1961, a grant from the U. S. Children's Bureau not only made it possible to continue this original program, but to expand it so as to include training opportunities for physicians anticipating careers in Ambulatory Pediatrics or Family Medicine.

Fifteen students in 1965 and 19 students in 1966 have taken the elective course in Family Health Care, which gives them the opportunity of providing comprehensive medical and health care to at least two families for the duration of their fourth year. This is one of the few opportunities in the Harvard Medical School for a student to experience the problems of the physician who provides most of the medical care required by our people, rather than those of the specialist in the teaching hospital to whom, by the studies of Kerr White, less than one percent of the disease episodes calling for medical care are referred.

Teaching has also included all Pediatric Medical House Staff at the hospital. Residents follow two to five families for their entire period at the Children's Hospital Medical Center. In 1964-66, each intern and first-year resident was assigned a primiparous

mother, saw her for a prenatal visit, and followed her newborn infant in the obstetrical hospital and subsequently. Now all residents coming to the hospital are assigned such a primiparous expectant mother.

Through collaboration with the Massachusetts Mental Health Center, a program has been developed in which fellows in the Family Health Care Program work with residents in psychiatry at a similar stage of training, sharing patients and participating jointly in weekly seminars. Dr. Bullard and Dr. Robey have supervised this program.

The long-term program of the Medical Care Research Unit seeks to evaluate the effectiveness of the comprehensive pediatric care, which is being offered to urban poor families, in improving their health. This project was initiated by a grant from the Commonwealth Fund (\$169,000 for three years) and now is supported by the Children's Bureau at a much higher level (approximately \$120,000 per year). The research techniques and data analysis are the product of close collaboration between those in the health professions and the two social scientists who direct the work of the Medical Care Research Unit. Initial data now available from the study suggest that:

- (1) Families use many rather than one health resource and this utilization differs for each member of the family.
- (2) Not all families want comprehensive care when it is offered to them.
- (3) Tremendous efforts are necessary to recruit so-called "hard core" families for this program.
- (4) Mothers play a crucial role in providing care to families no matter what their social circumstances.
- (5) Current methods of measuring morbidity are unsatisfactory, and new methods for measuring morbidity must be developed.

Eventually we hope this research effort will provide useful data for the design of health services for the urban poor. Such data are badly needed at a time when legislation promises great changes in patterns of delivery of medical care. Papers on the project have been presented to medical, public health and sociology meetings in this country and abroad.

Other current research in the division is concerned with children who fail to thrive, distribution of ipecac syrup as a poison prevention measure, and the use of the telephone for communication with health resources by the medically indigent.

Some 500 families and 1,600-plus children now receive care from the Program. Two hundred of these are families in the research project. More and more efforts are being made by the Division to assist in providing service to an ever-increasing number of families. The emphasis of the Unit has not been on volume of service, but rather on quality. It has primarily served as a research facility, with the community as its laboratory.

There have been a number of personnel changes in the Program during these two years. Dr. John Kosa, who had come as a Research Associate and Co-Director of the Medical Care Research Unit, became Lecturer in Sociology in the Department of Pediatrics, Harvard Medical School, and Director of the Medical Care Research Unit. Dr. Margaret Haegarty, a former fellow, joined the Program in mid-1966 as Assistant Director. A second sociologist, Dr. Leon Robertson, from Johns Hopkins University, has joined the Program as Research Project Director. Dr. Victor Sidel, Consultant Internist, has been succeeded by Dr. Robert Buxbaum, a member of the Staff of the Peter Bent Brigham Hospital and of the Department of Preventive Medicine at Harvard.

Clinical Genetics Division

Park S. Gerald, M.D. — Chief

With the encouragement of Dr. Diamond, who saw the coming importance of genetics to pediatrics and who himself became deeply involved in clinical genetic research through his work in blood grouping, Dr. Gerald has immersed himself in this field and become one of the recognized national leaders in clinical genetics. The former Ida C. Smith Building, originally the Surgical Ward for infants, was completely renovated a few years ago into a well-equipped laboratory for study of genetic disturbances of hemoglobin synthesis by Dr. Gerald and of amino acid metabolism by Dr. Efron. With the growth of Dr. Gerald's program, it now has full status as a Division of the Department, engaged in the provision of services to patients of the Hospital, in teaching and research.

Services to patients involve consultation, both clinical and with laboratory backing where necessary, for diagnosis, management, and counselling of individuals and families with congenital malformations or inherited diseases. This service extends to other hospitals in the Harvard Medical Area, particularly to the Boston Hospital for Women (Lying-in Division), the Peter Bent Brigham Hospital, and the Beth Israel Hospital. Two clinics are held at the Children's Hospital—a Genetic Clinic to which patients may be referred for consultation, and the PKU Clinic, established in collaboration with the Massachusetts Department of Public Health in order to provide prompt confirmation of cases of phenylketonuria picked up through its compulsory screening program of all infants born in the State, and to provide expert guidance to physicians involved in the management of confirmed cases. This has been run by Dr. Joseph L. Kennedy, Jr., who was trained in Dr. Fellers' Laboratory.

The teaching activities of the Division are extensive. Dr. Gerald has been given major responsibility for organizing expanded genetics teaching for second-year medical students, and also participates in teach-

ing clinical genetics as part of pediatric instruction for students and house staff.

The major purpose of the laboratory is to expand knowledge of human inheritance and its relation to disease. Dr. Gerald is involved in continuing studies in biochemical genetics—the elucidation of how the genetic material of the cells (DNA organized into chromosomes) affects the synthesis of the polypeptide chains which determine the structure of proteins—work to which Dr. Gerald has contributed importantly for the hemoglobins and now the haptoglobins. In addition, he has developed a very active laboratory for the study of cytogenetics, which, in close collaboration with Dr. Diamond and the Blood Grouping Laboratory, is engaged in mapping the human chromosomes. This is a major undertaking in human biology; here, the study of disease provides insight into normal human heredity. One of the fellows, Dr. Walzer, a member of the Department of Psychiatry, has undertaken to identify newborn infants with disturbances of the sex chromosomes at the Boston Hospital for Women (Lying-in Division) so that he may follow the impact of this biologic abnormality upon their subsequent psychological development. In order to perform chromosome analyses upon a large number of infants, he has developed a rapid screening technique for identification of infants with chromosome anomalies. Dr. Gerald is now applying this technique to screening large numbers of babies with multiple congenital malformations, since their incidence of chromosome anomalies is much higher than it is in the normal infants. Then by careful study in selected abnormal infants of the various gross abnormalities of body structure, the blood and such proteins as hemoglobin, haptoglobin, and certain enzymes which have a number of different inherited patterns, he hopes to be able to associate, as he already has in several instances, the different anomalies with specific parts of individual chromosomes.

Besides these basic studies, the Division is participating actively in two pilot screening programs for identifying inherited biochemical abnormalities in asymptomatic children. One, supported by the Children's Bureau, has been applying a simplified technique to the search for abnormalities in the concentration of specific amino acids in blood or urine. The other, the Genetic Alert Program, sponsored jointly by the National Foundation for Neuromuscular Diseases and the National Institutes of Health, is a collaborative pilot program to test the feasibility of mass screening for certain detectable, preventable, or treatable inherited diseases in their pre-symptomatic phase by tests on a small sample of blood, making use of automatic analytic and data processing methods, so it may be adapted to use in the child health programs of the future.

Support for the program of the Division has come from the National Institutes of Health, U. S. Chil-

dren's Bureau, John A. Hartford Foundation, Inc., and the National Foundation for Neuromuscular Diseases, Inc., through its local chapter, Aid to Muscular Disease Research.

Hematology Division

Louis K. Diamond, M.D. — Chief

Under Dr. Diamond's vigorous leadership, the Hematology Division has become one of the most active and productive groups within the Department. It continues to attract outstanding men as fellows; of those trained during the past two years, two have achieved full-time staff membership in this institution, two are still in training, one has become Technical Director of the Massachusetts State Blood Program of the American Red Cross, and three have taken up academic positions. Dr. Diamond's major contributions to pediatrics and to hematology have been recognized widely. In 1964, he received the Theodore Roosevelt Medal for Distinguished Public Service in Science. In 1965, he gave the George R. Minot Award Lectureship of the American Medical Association, and in 1966, the Rachford Memorial Lecture at the Children's Hospital in Cincinnati. Finally, at the Conference on Mental Retardation of the Joseph P. Kennedy Jr. Foundation, Dr. Diamond and his former associate, Dr. F. H. Allen, Jr., received the Foundation's Award for Scientific Research in Mental Retardation. This was in recognition of their application of new knowledge of the Rh factor to the prevention of kernicterus, the very serious neurological complication of erythroblastosis fetalis, by exchange transfusion, a procedure which has saved the lives of thousands of babies and prevented cerebral palsy and mental retardation in many more.

The ongoing research program has resulted in a series of important papers during the past two years on iron-deficiency anemia, aplastic anemia, hereditary blood disease, coagulation disturbances, and blood banking. The availability of this active research group has provided many important services to our patients. This has been particularly true of the Coagulation Laboratory headed by Dr. Herbert Strauss, whose extensive knowledge of coagulation disorders has made for greatly improved care of patients with hemophilia, many of whom require care on other services for complications and intercurrent disease.

The Blood Transfusion Service of the Hospital is under the direction of Dr. Diamond, with Dr. Kevy, as Associate Director, in full-time command of its operation. It, too, has provided exemplary service and has been able to meet what probably is the heaviest demand for blood and its derivatives on almost any hospital blood bank in the world. Dr. Kevy has collaborated closely with the cardiac surgery group in an investigation which uncovered the mechanism for the unexpected hemorrhage which was so trouble-

some in the early days of open heart surgery and led to the development of a successful method of prevention. He has also worked with Dr. John G. Gibson of the Protein Foundation on CPD solution, an improved anticoagulant solution which adds another week to the three-week storage life of whole blood collected in conventional ACD solution.

The interest in hereditary diseases of the red blood cells led to collaboration with the hematology group at the Peter Bent Brigham Hospital, where Dr. David Nathan was applying his combined knowledge of clinical hematology and biochemistry to study of the red cell membrane. This collaboration has gone one step further, and Dr. Nathan has joined the Department, first as Research Associate, and finally on July 1, 1966, as full-time Associate in Hematology.

The work of the Division has been supported by research and training grants from the National Institutes of Health and by generous support from the John A. Hartford Foundation, Inc. Their original grant, which ran for a total of nine years, provided for the hospital care of patients with disorders of the blood and made possible the study treatment of a large number of patients with diseases of the blood cells or plasma proteins without financial hardship to the patient or financial loss to the Hospital.

Immunology Division

Charles A. Jancway, M.D. — Chief

In its new quarters above the Hyperbaric Chamber, the Immunology Research Laboratory is located in close proximity to the research laboratories of the Clinical Genetics, Hematology, and Renal-Metabolic Divisions. In this way, collaborative research and the sharing of expensive items of equipment has been made possible. The new laboratory has been rapidly filling up, as it should, with its own personnel, who now number eight, and those who share in the use of equipment. Dr. Merler, as Chemist, is in charge of this valuable equipment for work in protein chemistry, which is available as far as possible to anyone with a suitable problem; he is in the laboratory full-time and plays an invaluable role in the training of fellows, in helping other investigators and in pursuing his own research on antibody structure through analysis of the low molecular weight urinary gamma globulins.

Dr. Rosen, who is the active director of the laboratory under the Chief's general supervision, carries on a very heavy program of investigation—much of it with Dr. Martin Klemperer, and a considerable amount of teaching related to his research interests. Laboratory research is focused on two major problems: (1) the relationship of the complement system to human disease; (2) the nature of the various immunological deficiency syndromes. Complement work extends into genetics on the one hand, through studies on hereditary angioneurotic edema and hereditary deficiency of the second component of com-

plement; and into physiology and immunology on the other, through the effort to determine the relation of these biochemical deficiencies to the possible biological functions of complement. An application of these studies has led to the development of an improved quantitative measurement of serum complement levels, using its third component (beta_{1c} globulin). This has been applied to the study of renal and collagen diseases and has led to recognition of a specific disease entity—progressive glomerulonephritis among those with the nephrotic syndrome. The work on immunological deficiency syndromes ties in closely with chemical studies of white blood cells by the Hematology Division, with research going on in genetics and infectious disease, and with basic studies of gamma globulin structure by Dr. Merler.

Long-term clinical studies of the collagen diseases are continuing through consultations on the wards, through the study of special patients in the Clinical Research Center, and through two weekly clinics, a Protein Clinic, attended by patients with a variety of disorders affecting the serum proteins, and a Rheumatoid Arthritis Clinic conducted by Dr. Rosen and Dr. Paul Griffin of the Department of Orthopedic Surgery. The management of Wilson's disease, an hereditary disorder of copper metabolism affecting liver and brain particularly, and now detectable before symptoms begin and treatable with diet and medication, is the subject of another long-term clinical study.

The Immunology Laboratory is providing laboratory service to the Hospital as a whole through the performance of certain special tests, such as complement determination and immunoelectrophoretic analyses of the serum proteins.

Endocrine Division

John F. Crigler, Jr., M.D. — Chief

The Endocrine Division exemplifies many of the problems which beset our Department. It must cope with a very heavy volume of service, which is made more burdensome by the fact that consultations often necessitate extensive special laboratory studies and repeated attendance by the consultant. The conditions referred to the Endocrine Division are usually chronic, although seldom life-threatening, requiring continuing supervision over many years. Thus, there is a steadily increasing case load, and supervision must carry over into adolescence and possibly into adulthood, as the patients become dependent on physicians whom they have known all their lives.

Three clinics are held each week: Diabetic Clinic, Endocrine Clinic for Infants and Children, and Endocrine Clinic for Adolescents. During the past two years there were 2,585 visits, and over 180 patients were seen in consultation in the various services of the Hospital. The Endocrine Laboratories carried

out a total of nearly 10,000 special laboratory tests and measurements during that period. This has represented a very heavy load of clinical responsibility upon a small professional staff, whose Chief has had to devote a large share of his time during this period to the initiation and direction of the Clinical Research Center, including its laboratories which are located in juxtaposition with those of the Endocrine Division.

Dr. Jerome Grunt, an unusual man with a Ph.D. in Anatomy as well as an M.D., who spent several years in advanced training with Dr. Crigler, left on August 31, 1964, to become Associate Professor of Pediatrics at Yale and Director of the Clinical Research Center for Children at the Grace-New Haven Hospital. On July 1, 1965, Dr. Joseph N. Fisher, a well-trained internist, with a good background in adult endocrinology and two years of training in carbohydrate and lipid metabolism under Professor Eric Ball at the Harvard Medical School, joined the Division to obtain special training in the endocrinology of infants, children and adolescents, and he has added real strength to the staff.

Despite the heavy load of service and considerable time devoted to teaching both pediatrics and endocrinology, the research program has continued to move forward on a broad front. Included are studies on the metabolism of the corticosteroids, the effect of hypothalamic lesions following neurosurgical ablation of craniopharyngiomas on hormonal and neural regulation of body fluids and metabolism, the experimental use of human growth hormone, hypoglycemia in infants, the regulation of calcium metabolism, and sexual abnormalities. A total of 13 scientific papers were published during the two-year period by members of the staff. Dr. Norman Gold, assisted by Mr. Edwin Grab, has played a major role in this research and in the laboratory training of fellows and summer students.

All of this has only been possible as a result of strenuous labor by Dr. Crigler and his associates. It points up the necessity of finding a mechanism for better support of the essential service activities of our heavily burdened staff. In the case of the Endocrine Division, generous assistance from the General Research Support Grant at a critical time has enabled the institution to maintain a group which is not only essential for the care of an important group of patients on various services but to the clinical research programs of different departments.

Renal-Metabolic Division

Francis X. Fellers, M.D. — Chief

Like the Endocrine Division, this group likewise carries a heavy burden of service—assistance to many departments and our own house staff in the management of acute therapeutic problems affecting the body fluids and in the long-term care and study of

a large group of patients with chronic kidney disease. This is shown by the statistics for the two-year period.

Ambulatory Services: 1,326 Clinic Visits, of which about one-third were seen in a special Adolescent Renal Disease Clinic, and 100 as consultations.

In-patient Services: 82 patients cared for on the general wards, 102 in the Clinical Research Center, and 147 consultations seen.

In addition, several new clinical activities have been instituted. With the addition of Dr. Perlmutter to the Department of Surgery as a hospital-based urologist, a joint clinic for urinary tract infections has been established. Seventy-two patients were evaluated in the first year, and ten are still being followed. About 35 patients with metabolic bone disease are being followed and their care supervised in the regular medical and orthopedic clinics. In 1964, Dr. William B. Macdonald and Dr. Fellers investigated cases of cystinuria, an hereditary disease in which the increased output of this poorly soluble amino acid leads to repeated stone formation. Although supposedly a benign condition, their clinical studies showed that it led to a great deal of suffering and often to serious complications. They developed a test for measurement of free cystine in the urine and then showed that penicillamine, which forms a soluble complex, would markedly lower the free cystine in the urine. Twenty-three patients are now being followed on penicillamine treatment, which looks like a relatively simple way to overcome this inborn error of metabolism and to permit its victims to lead a normal life.

As the group of patients with chronic renal insufficiency increases, their care becomes more and more of a challenge. In close liaison with Dr. Merrill's Renal Study group at the Peter Bent Brigham Hospital, studies of the feasibility of repeated dialysis treatment are being carried out in the hope that ultimately successful transplantation of kidneys from normal individuals may be technically and practically feasible for those with certain types of renal disease. This is an area where expert assistance from the Department of Social Service will be increasingly necessary. The laboratory has carried out 13,117 tests and special determinations for hospital patients during the two-year period.

Training activities of this Division are particularly relevant to the needs of pediatricians from the developing countries, where the intelligent management and study of diarrheal diseases, malnutrition, and kidney disease, which is common, requires just the sort of laboratory and clinical experience which Dr. Fellers can provide. Two medical students have worked on summer fellowships, and former trainees are now running clinics for children with renal disease in India and Yugoslavia, while a third is in Louvain.

The research program has been concerned with the metabolism of vitamin D and its disturbances in certain clinical disorders affecting the bones, with the evaluation of long-term management of the nephrotic syndrome, the etiologic classification of chronic renal disease in children, magnesium metabolism, and the clinical study of certain metabolic disorders such as hyperaldosteronism and cystine storage disease. Sixteen papers and abstracts have been published by Dr. Fellers and his associates during the period of this report. Grants from the National Institutes of Health, the Cranberry Growers Association and the Squibb Institute for Medical Research have supported the research program.

Nutrition and Gastroenterology

Harry Shwachman, M.D. — Chief

Dr. Shwachman combines heavy responsibilities as Chief of the Division of Clinical Laboratories in the Division of Laboratories and Research where he carries on his research, with a remarkably effective performance as a member of this Department, which he serves, not only as an able general pediatrician and teacher, but as our expert on gastrointestinal problems and particularly on cystic fibrosis. The Nutrition Clinic, where most of these patients are seen in two clinic sessions a week, is now supervising the care of over 800 patients with cystic fibrosis, probably the largest clinic group in the world, and the care is outstanding. During the course of each year approximately 125 cases of cystic fibrosis are admitted to the medical wards for special evaluation or treatment of acute episodes of illness. Although still a very serious disease, the prognosis has altered remarkably over the years so that the majority who succumb now are in late childhood or early adolescence, rather than during infancy or the toddler years as was formerly the case. Furthermore, Dr. Shwachman's group is following a number of adolescents and a few adults. Dr. Shwachman's expert knowledge of this disease has kept him in a prominent position in the Medical Council of the National Cystic Fibrosis Research Foundation, and has made him a much sought after lecturer on this continent and abroad.

His other research interests are multiple, but involve the study of patients with deficiencies of the sugar-splitting enzymes in the duodenal mucosa, of patients with celiac disease and other digestive disturbances. He has been very alert in collaborating with workers in other institutions and in other fields, often with very happy results. The presence of Mr. Louis Kopito in the Division of Clinical Laboratories, providing advanced technical methods for rapid measurement of various metals, has been of tremendous assistance to members of the Department of Medicine in the study of a variety of diseases such as lead poisoning and Wilson's disease.

Support for many of the clinical activities of the

group has come from the National Cystic Fibrosis Research Foundation and the National Institutes of Health.

Infectious Diseases

Samuel Katz, M.D. *Chief*

Infectious disease is such a major part of pediatrics that a large part of the clinical activity of the Medical Service is devoted to the care of children with infections. These are of two main types: (1) spontaneous infections arising in the community, the majority of which are due to viruses or pathogenic bacteria, or both, and are part of the large and small epidemics of infection which continually sweep through the population; (2) infections, often caused by bacteria and fungi which formerly would not have been considered pathogenic, which are able to invade because resistance has been markedly altered by disease or by the impact of the various powerful tools of modern medical treatment—drugs, radiation, or operative manipulation.

Clinical teaching and research in the field of virus diseases has been carried on by members of the Division of Infectious Disease Research headed by Dr. John Enders in the Division of Laboratories and Research. Dr. Samuel Katz has served as the main clinical leader of this group, and with the fellows has given us great assistance in the care of patients and in the study of unusual cases. His research, which had previously been heavily involved with the development and evaluation of live-attenuated measles vaccine, is now concerned primarily with latent virus infections.

The second type of infection described above increasingly demands expert consultation by a physician with a deep knowledge of bacterial genetics and metabolism and of the mechanisms of response or resistance to antimicrobial agents, and requires hospital surveillance on behalf of all services. For a number of years, Dr. Shwachman tried valiantly to meet these demands in addition to all his other duties, but it has become increasingly clear that a hospital such as ours must accept a clear responsibility for a highly organized service in the use of antibiotics and the control of hospital infection. A first step in that direction is the addition of Dr. David H. Smith to our staff, after four years spent in research on antibiotic action and bacterial resistance in the Department of Bacteriology and Immunology at the Harvard Medical School. It will be essential to provide adequate assistance and space, so that his expert knowledge can be combined with Dr. Katz's knowledge of viral diseases and utilized for better care of patients on all services, without impairing his present highly productive and exciting research activities. These have been continued temporarily in laboratories at the Harvard Medical School and have had support from the National Institutes of Health and the Medical Foundation, Inc.

Rheumatic Fever Research Unit of the House of the Good Samaritan

Benedict F. Massell, M.D. — Director

Closely allied to the field of infectious disease is rheumatic fever, which appears to be a peculiar response, possibly determined in part by genetic factors, on the part of one to two percent of the population to pharyngeal infection with group A beta-hemolytic streptococci. This is a highly important disease, because approximately half of the attacks of acute rheumatic fever result in rheumatic heart disease, one of the major chronic diseases of mankind. The House of the Good Samaritan has been concerned with rheumatic fever since the 1920's, and its records, and the more than 2,000 patients being followed in its clinics, represent the greatest reservoir of valuable information about the natural history of this disease available in the world today. It is against this background of laboratory and clinical experience that all advances in prevention and treatment must be evaluated.

Dr. Massell has the tremendous advantage of having been continuously active in the research program of the House of the Good Samaritan for more than 30 years. He has made important contributions to present knowledge of the prevention of the disease and its recurrences by adequate penicillin treatment of the acute streptococcal infection and by chemoprophylaxis in rheumatic patients, and to the controversial question of the treatment of established rheumatic carditis.

Although there can be no doubt that application of this new knowledge has decreased the amount of hospitalization required for rheumatic fever, as well as the extent of cardiac invalidism produced by the disease, new cases continue to appear and recurrences to develop as a result of the practical problems of continuing chemoprophylaxis. During the last two years the number of rheumatic admissions to the Good Samaritan divisions was as high as at any time during the previous 20 years, although the average length of stay has been greatly shortened.

A trained bacteriologist, J. Gabriel Michael, Ph.D., and Dr. Massell have carried out a major investigation which has shown that it is possible to prepare an antigen from a beta-hemolytic streptococcus strain which will induce the formation of type specific protective antibodies, both in those with no previous immunity and those with a low residual antibody level from previous infections. Unfortunately, Dr. Michael left last summer to become Associate Professor of Microbiology at the University of Cincinnati, but Dr. Massell is pursuing this promising new lead further.

The research program is aimed at three major problems: (1) exploration of the feasibility of active immunization against streptococcal disease; (2) study of the natural history and epidemiology of streptococcal infections in families; (3) study of

the long-term course of rheumatic heart disease in the light of new knowledge of the factors involved in recurrences of rheumatic activity and in altering the outlook of attacks.

The presence of this experienced research group has made an important contribution to the care of all our rheumatic patients and to the training of our house staff. Dr. Gabor Czoncizer has been particularly helpful to the Medical Service in this regard.

Pediatrics of the Newborn

Because of the increasing importance of genetic diseases and rapidly growing knowledge of the mutual interactions of mother and fetus during gestation, prenatal and perinatal or neonatal pediatrics is becoming a major field of pediatric practice, teaching and investigation. During the past 20 years, this department has been fortunate in having two extremely able people intimately concerned with this field—Dr. Stewart Clifford who, until his retirement last summer, served as Chief of Pediatrics at the Boston Hospital for Women (Lying-in Division) and Dr. Clement A. Smith, its Director of Research upon the Newborn. Dr. Clifford has been very active in clinical studies upon the care of premature infants, in delineation of the more recently recognized syndrome of postmaturity or, as it is now called, dysmaturity, and as one of the leaders of the national collaborative study of perinatal factors in the etiology of cerebral palsy and mental retardation, organized with the National Institute of Neurological Diseases and Blindness. Dr. Smith's group, supported by the U. S. Public Health Service and the Association for the Aid of Crippled Children, have steadily sought for a better understanding of the adjustments of the newborn infant to extrauterine life and particularly the adjustments of respiration and circulation, which account for so much of the morbidity and mortality of the newborn infant. The close relationship with the field of obstetrics, which interest in the newborn demands, has been fostered by the broad vision of the field of human reproduction adopted by Dr. Reid and his colleagues in obstetrics at the Boston Hospital for Women (Lying-in Division). It is essential for the development of obstetrics and pediatrics at the Harvard Medical School that this close liaison between the two institutions be maintained; it is our hope that even some physical connection will ultimately be possible, thus permitting the full resources of The Children's Hospital Medical Center to be focused on the care of the fetus and newborn in close collaboration with the Department of Obstetrics and Gynecology at the Lying-in Hospital.

In addition to the infants born, cared for and studied at the Lying-in, newborn infants are referred to the Children's Hospital for care from other hospitals, usually because of serious disease—most often congenital heart disease, erythroblastosis fetalis, sepsis or some unusual neurologic disorder. The Newborn

Division, where they are cared for, has a capacity of 12, and is staffed by a team of house officers, including an exchange resident from the Children's Medical Service of the Massachusetts General Hospital, five of whom rotate through this service each year. Occupancy of the Division has averaged approximately 80 percent, with great swings from day to day. Mortality has remained around 15 percent, due to the serious nature of the cases admitted. About 100 exchange transfusions are performed annually.

The Newborn Nursery was moved in late 1964 from Division 25 to make way for the Clinical Research Center to what formerly was the Metabolic Ward at one end of Division 37. These new quarters have been satisfactory. The Nursing Service has been admirable under the leadership of Miss Barbara Goldberg, and the general medical supervision of the Unit has been exercised by Dr. Samuel L. Katz, as Chief of the Newborn Division. The Division initiated the program, now adopted by the entire hospital, of employing formulas for infant feeding packaged by reputable commercial firms. This has led to marked reduction in the staff and activities of the Milk Laboratory, thus releasing much needed personnel for other duties.

An important research effort concerning the perinatal period is the Maternal and Infant Health Study, directed by Dr. James Drorbaugh. This study is aimed at the follow-up, through detailed pediatric, neurologic, psychologic, and speech and hearing examinations, of all the infants born at the Lying-in Hospital and studied under the project headed by Dr. Clifford. His group made the prenatal and perinatal studies and followed the babies for one year; thereafter Dr. Drorbaugh's team follows them through age 7, and it now looks as though their educational progress might be studied up to the age of 12. The objective is to determine what untoward events occurring in prenatal life, during delivery, and in the neonatal period, can be shown by statistical correlation to affect neurological function and development in childhood. The largest single group of infants enrolled in this national collaborative study are those in the Boston Lying-in Hospital-Children's Hospital Group, and it is a source of pride that the best record of keeping patients in this long-term study has been made here. Our portion of this study is at its peak now, whereas the Lying-in Hospital program has been phased out. The new quarters provided several years ago by the Hospital in the Faxon Building, which are integrated with those of the Child Health Division on the floor below, has made it possible for Dr. Drorbaugh and his staff to carry on this enormous undertaking, which is supported by the National Institute of Neurological Diseases and Blindness.

Closely allied to this program, and using the same facilities and staff, is a special follow-up study being

made by Drs. Drorbaugh and Hubbell of babies born to mothers with diabetes. This is a sample of the studies which will be made increasingly in future, using many of the same techniques, of selective studies of groups of babies whom the present study has identified as those at high risk for one or another cause.

Even in a report this long, it is impossible to do justice to the contributions of the many people who make up the Medical Department. I owe a special debt of gratitude to the group who added a share of my responsibilities to theirs during my six months' sabbatical leave in 1965-66—to Dr. Diamond for serving as Head of the Department of Pediatrics at the Medical School, to Dr. William Berenberg for acting as Chief of the Medical Service at the Hospital, and to Dr. Alexander Nadas and Dr. John

Crigler for their support and advice, so that a number of healthy decisions and innovations were made in my absence.

The task of trying to keep the manifold activities of a large department in balance and moving toward the common goal of improving child health would be an impossible one, were it not for the loyalty, enthusiasm and generosity with their time and thought of all my colleagues in the department, and were it not for the understanding and devotion of many people in other departments and health disciplines, whose combined efforts make the Children's Hospital Medical Center the institution that it is. The common interest in children, which binds us all together, and the satisfaction of seeing progress being made toward equalizing opportunities for a healthy life, makes service in this hospital no burden, but a privilege.

Table I

	In-patient Services Department of Medicine					
	1946-47	1956-57	1962-63	1963-64	1964-65	1965-66
Short-Term Divisions (Beds)						
Admissions	2,261	2,917	4,249	3,751	3,685	3,528
Hospital Days	33,926	26,484	33,334	32,207	31,556	34,920
Average Stay	15	8.4	7.9	8.6	8.0	10.1
Long-Term Divisions (Beds)						
Admissions	464	253	120	137	222	150
Hospital Days	32,692	20,757	5,963	5,722	6,218	6,920
Average Stay	70	82	50	28.6	19.6	28.2
TOTAL ADMISSIONS	2,725	3,007	4,369	3,888	3,907	3,678
TOTAL HOSPITAL DAYS	66,618	47,241	39,297	37,929	38,320	41,840

	Ambulatory Services No. of Visits Department of Medicine					
	1946	1956-57	1962-63	1963-64	1964-65	1965-66
Child Health Division	—	2,839	3,372	3,053	4,305	4,455
Medical Emergency	—	5,506	21,658	27,640	34,314*	38,347*
General Medical OPD	13,470	7,701	7,544	7,420	7,379	6,755
Special Medical Clinics	10,890†	10,057†	10,961†	11,868†	13,579†	13,655†
Adolescents' Unit	—	4,807	5,255	7,395	7,385	7,264
TOTAL VISITS	24,360	30,939	48,790	57,376	66,962	70,476
		† Rheumatic Fever (HGS)			4,061	3,957
		Total Medical			71,023	74,433
		Total whole hospital:			139,828	149,098
		% Medical			(51%)	(50%)

* Includes $\frac{2}{3}$ of visits to Medical-Surgical Emergency Clinic (11 p.m. - 8 a.m.)

† Includes visits to Neurology and Seizure Clinics

Table II

Diagnoses Made in New Patients During
Six-month Period in MOPD
Department of Medicine

<i>Allergy</i>	169
<i>Respiratory Disturbances</i>	96
Acute Nasopharyngitis	31
Hypertrophied tonsils and adenoids	65
<i>Disturbances of Growth and Nutrition</i>	161
Obesity	50
Failure to Thrive	101
<i>Congenital Defects</i>	101
Congenital Defects (non-cardiac)	83
Mongolism	18
<i>Cardiac Problems</i>	191
Benign Heart Murmur	102
Congenital Heart Disease	83
Rheumatic Heart Disease	6
<i>Functional Disturbances</i>	542
(Neuro-psychiatric)	
Behavior Problems	147
Learning Disorders	92
Mental Retardation	97
Seizures	99
Headache (Migraine 5)	30
Enuresis	68
Encopresis	19
<i>Urinary Tract Infections</i>	20
<i>Incomplete Diagnoses</i>	224

Table III

Mortality
Department of Medicine

*Comparative Figures (Past Year and
Two Years Ago)*

	1963-64	1965-66
Number of Admissions	3,888	3,678
Number of Deaths	249	243
Mortality	6.4%	6.6%
Postmortem Examinations	87%	85%
Major Causes of Death:		
1. <i>Neoplastic Diseases</i>	33%	24%
2. <i>Heart Disease</i> (nearly all congenital)	21%	18%
3. <i>Other Congenital Mal-</i> <i>formations</i> (including inborn metabolic er- rors)	13%	14%
4. <i>Infection</i>	4%	10%
5. <i>Prematurity</i>	14%	7%
6. <i>Kidney Disease</i>	2%	3%
Miscellaneous and Unknown	13%	24%

1965-66 House Staff

Residents

Frederick P. A. Capps, M.B., B.S.
Jagdish M. Gupta, M.B., B.S.

Senior Assistant Residents

Vazken M. Der Kaloustian, M.D.
William C. Mentzer, M.D.
Gabriel S. Zatlín, M.D.

Assistant Residents

Cheston M. Berlin, Jr., M.D.
William E. Boyle, Jr., M.D.
Ayres T. D'Souza, M.D.
Larry H. Honikman, M.D.
Frederick H. Lovejoy, Jr., M.D.
Gary J. Myers, M.D.
Cathleen C. O'Brien, M.D.
Marshall L. Reiner, Jr., M.D.
Sol Rockenmacher, M.D.
Alan R. G. Wallace, M.B., B.Ch.

Junior Assistant Residents

Robert A. Greenberg, M.D.
Owen C. Grush, M.D.
Ronald J. Heller, M.D.
Sue Y. S. Kimm, M.D.
Stanley A. Mendoza, M.D.
Alan H. Nauss, M.D.
Jane Pitt, M.D.
Jonathan B. Rosefsky, M.D.
Nathan P. Strause, III, M.D.
Stephen F. Wang, M.D.

Interns

Robert V. Fulk, Jr., M.D.
Jean-Pierre Habicht, M.D.
Harvey L. Ozer, M.D.
Alan A. Rozycki, M.D.
Karl F. Schulze, Jr., M.D.

DEPARTMENT OF MEDICINE

1965-66

Affiliated Residents and Residents for Ambulatory Services

At the Beth Israel Hospital and CHMC

Julia Jyh-Ning Chen, M.D.

Gordana M. Murray, M.D. (5/1/65-10/31/65)

Fernando Tome, M.D.

At Beverly Hospital and CHMC

B. D. J. S. Fernando, M.B., B.S.

Kwok Cheung Lam, M.D.

Kook Sang Oh, M.D.

Irene Elizabeth Plattner, M.D.

Alan R. G. Wallace, B.M., B.Ch.

At Mount Auburn Hospital and CHMC

U. S. Rai, M.B., B.S.

S. S. Sanghvi, M.B., B.S.

At North Shore Babies and Children's Hospital and CHMC

D. M. Al-Thamery, M.B., B.Ch.

Nagamani R. Beligere, M.B., B.S.

Marie Eugenia Perea, M.D.

Max Salas, M.D.

Residents for Ambulatory Services at CHMC

B. J. Armstrong, M.B., B.S. (Half time)

Philip Datloff, M.D.

R. L. Kolodny, M.D. (Half time)

Jung Ok Lee, M.D.

E. G. Lund, M.D.

Joseph B. May, M.D.

A. W. Pittelli, M.D. (Half time)

U. T. Rolfe, M.D. (Half time)

Robert M. Stewart, M.D.

1965-66 Fellows and Research Fellows

Adolescents' Unit

Morton J. Franklin, M.D.

Richard W. Hammer, M.D.

S. J. Hart-Davis, M.B., B.Ch.

Roderick N. MacDonald, M.D.

Robert P. Rood, M.D.

John S. Terrell, M.D.

Allergy Division

Elza Oppenheimer Fischler, M.D.

Cardiology Division

William H. Albers, M.D.

R. Curtis Ellison, M.D.

Paul Gamboa, M.D.

W. W. Miller, M.D.

Madhu R. Mody, M.D.

William H. Plauth, M.D.

Albert Price, M.D.

Amnon Rosenthal, M.D.

Albert W. Sparrow, M.D.

Stella Van Praagh, M.D.

Henry R. Wagner, M.D.

Rheumatic Fever Division

Francisco Amezcua, M.D.

Jacqueline T. Amezcua, M.D.

Lourdes C. Felarca, M.D.

Garabed Garabedian, M.D.

Child Health Division

J. Whitney Brown, M.D.

Richard I. Feinbloom, M.D.

Margaret C. Heagarty, M.D.

George L. Robb, M.D.

Psychiatry Division

Gary Brecher, M.D.

David S. Lubell, M.D.

Josephine L. Murray, M.D.

Luther R. White, M.D.

Others

Israel F. Abroms, M.D.

Rosemary C. Leake, M.D.

Metabolism Division—Endocrinology Unit

Theodore W. AvRuskin, M.D.

Abraham Benderly, M.D.

Myron Siner, M.D.

Metabolism Division—Clinical Genetics Unit

F. P. A. Capps, M.B., B.S.

Mary A. Giambattista, M.D.

Anne-Marie Schindler, M.D.

W. Wertelecki, M.D.

Metabolism Division—Renal Unit

Enrique M. Galan, M.D.

Vilma Piedrahita, M.D.

Metabolism Division—Immunology Unit

Roberto R. Kretschmer, M.D.

Alan S. Levin, M.D.

Sydney E. Salmon, M.D.

Hematology Division

Robert L. Baehner, M.D.

Gerald E. Bloom, M.D.

Andre D. Lascari, M.D.

Denis R. Miller, M.D.

Elias Schwartz, M.D.

Infectious Disease Division
Catherine M. Wilfert, M.D.

Respiratory Physiology Division
Luisa C. Stigol, M.D.

Seizure Division
Pinchas Lerman, M.D.

Tumor Therapy Division
Lakshmi Das, M.D.
Clare Hilton, M.B., B.S.
Maria Eugenia Perea, M.D.

Nutrition Division
Mary Goodchild, M.B., B.S.
Ayfer Gunalp, M.D.
J. P. Rao, M.D.

Newborn Diseases Division
Richard S. Baum, M.D.
Margaret Kemball, M.B., B.S.
Charles C. Nourse, M.B., B.Ch.
James R. Tiernan, M.D.

1964-65 House Staff

M. David Atkin, M.D. (7/1/64-12/31/64)
John L. Green, M.D. (7/1/64-8/31/64)
A. Myron Johnson, M.D. (9/1/64-6/30/65)
Richard J. Pickering, M.D. (1/1/65-6/30/65)

Residents

Robert H. P. Fung, M.D.
George A. Nankervis, M.D.
Richard J. Pickering, M.D. (7/1/64-12/31/64)

Assistant Residents

Robert A. deLemos, M.D.
Vazken M. Der Kaloustian, M.D.
Richard I. Feinbloom, M.D.
David Z. Friedberg, M.D.
Theodore Friedmann, M.D.
Ronald Gold, M.D.
Thomas P. Graham, Jr., M.D. (2/20/65-6/30/65)
Edward B. Marsh, Jr., M.D.
William C. Mentzer, Jr., M.D.
Catherine Wilfert, M.D.

Junior Assistant Residents

Barry R. Adels, M.D.
William E. Boyle, M.D.
Thomas P. Graham, Jr., M.D. (7/1/64-2/19/65)
Rebecca A. Hanson, M.D.
Larry H. Honikman, M.D.
Howard E. Kulin, M.D.

Gary J. Myers, M.D.
Sol Rockenmacher, M.D.
Jack D. Singer, M.D.
Saul Wider, M.D. (to 12/31/64)

Interns

Kathryn D. Anderson, M.D.
Owen C. Grush, M.D.
Sue Y. S. Kimm, M.D.
Alan S. Levin, M.D.
Alan H. Nauss, M.D.
Jane Pitt, M.D.

1964-65

Affiliated Residents and Residents for Ambulatory Services

At Beth Israel Hospital and CHMC

Hie Won Lee, M.D.
Heloise M. Billotte, M.D.
Clare Hilton, M.B., B.S.
Jung Ok Lee, M.D.
Fernando Tome, M.D.

At Beverly Hospital and CHMC

Luis A. Barandiaran, M.D.
Cornelis A. Post, M.D.
Alan R. G. Wallace, M.D.

At Mount Auburn Hospital and CHMC

Liliane Lordan, M.D.
Jung Ok Lee, M.D.
Uma S. Rai, M.B.B.S.

At North Shore Babies and Children's Hospital and CHMC

Jean Duquella, M.D.
Ichety S. Saraswathy, M.D.
Ayres T. D'Souza, M.D.
Maria Eugenia Perea, M.D.

Residents for Ambulatory Services

C. L. Morgan, M.D.
A. W. Pittelli, M.D.
J. G. Rao, M.D.
R. O. Recchia, M.D.
P. N. Khanna, M.D.
R. L. Kolodny, M.D.
Barbara J. Armstrong, M.B.B.S.
Walter L. McLean, M.D.
Enrique Manuel Galan, M.D.
Maria Theresa Piccinini, M.D.
Celia S. Sayoc, M.D.

DEPARTMENT OF MEDICINE

1964-65

Fellows and Research Fellows

Adolescent Unit

Ralph Baumring, M.D.
M. J. Franklin, M.D.
N. Koulischer, M.D.
G. A. Rigg, M.D.
G. P. Rizzzone, M.D.
Mary E. Robertson, M.D.
Alan J. Siervert, M.D.
Gabriel S. Zatlin, M.D.
Allergy Division
Miguel A. Lanz, M.D.

Cardiology Division

George C. Contis, M.D.
Walter L. Gamble, M.D.
Welton M. Gersonoy, M.D.
Allan Goldblatt, M.D.
Maximilian G. Kaulbach, M.D.
C. G. C. LaFarge, M.D.
M. R. Mody, M.D.
Clarence L. Morgan, M.D.
William H. Plauth, Jr., M.D.
O. G. Thilenius, M.D.
Henry R. Wagner, M.D.
Sergio R. Aguilar, M.D.
Raul Gamboa, M.D.
Arlette Gallez, M.D.

Rheumatic Fever Division (HGS)

Francisco Amezcua, M.D.
J. T. Amezcua, M.D.
Mary B. Biery, M.D.
Richard E. Kauf, M.D.

Child Health Division

Ralph Earle, Jr., M.D.
John L. Green, M.D.
Margaret C. Heagerty, M.D.
Vernon L. James, M.D.
Margaret R. Pickering, M.D.
Ian R. McWhinney, M.D.

Endocrinology Division

Theodore W. AvRuskin, M.D.
Abraham Benderly, M.D.
Pierre R. O. Melice, M.D.
Myron Siner, M.D.
Andres Fanconi, M.D.
Mirna I. A. Herrera, M.D.

Hematology Division

Gerald E. Bloom, M.D.
George W. Dana, M.D.
Mary A. Giambattista, M.D.
Martin R. Klempner, M.D.

Denis R. Miller, M.D.
Mary Santorineau, M.D.
Alfred Weil, M.D.
Simonetta L. Tosi, M.D.
Allan Kliman, M.D.

Infectious Diseases

David J. Lang, M.D.
Altan Gunalp, M.D.
Robert J. Warren, M.D.

Seizure Unit

Giuseppe Erba, M.D.
Pinchas Lerman, M.D.

Newborn Diseases Division

George E. Cassady, M.D.
Florence Geller, M.D.
James R. Tiernan, M.D.
Klaus P. Riegel, M.D.

Nutrition Division

Barbara A. Donnison, M.B., B.Chir.
A. A. A. Roura, M.D.
R. R. W. Townley, M.B., B.S.

Metabolism Division

Christian Herrera, M.D.
Joseph L. Kennedy, Jr., M.D.
Gerard Ponchon, M.D.
Milana P. Rolovic, M.D.

Respiratory Physiology Division

Mary Ellen Beck, M.D.
Luiza C. Stigol, M.D.

Tumor Therapy Division

Lakshmi Das, M.D.
Hossein Hivand, M.D.
Khalil Maghen, M.D.
Lisa Yessayan, M.D.
Raymond E. Lenhard, Jr., M.D.

Psychiatry Division

Alan N. Marks, M.D.
Josephine L. Murray, M.D.
Elliott Podoll, M.D.
R. Wyman Sanders, M.D.

Others

Israel F. Abroms, M.D.
Charles A. Alford, M.D.
Carlos Beltran-Paz, M.D.
Samuel P. Gotoff, M.D.
Roberto Kretschmer, M.D.
Judith M. MacDonald, M.B., B.S.
Chong Moo Park, M.D.

Activities in the Department of Neurology have increased significantly since the last narrative report, in the areas of patient service (including numbers of patients receiving primary care and numbers of inpatient and outpatient consultations), teaching of both house staff and medical students, and research activities. The sharp growth of our activities and responsibilities is a natural result of our status as the newest department at CHMC, but would not be possible without the sustained support and encouragement of the Joint Planning Committee of the hospital, the Staff Executive Committee and many members of the staff. The pioneering work of both Dr. Bronson Crothers and Dr. Randolph Byers in establishing a neurological service within the Department of Medicine was an essential first step in the evolution of this Department, and the base upon which subsequent development has become possible.

Service to Patients

Our increased staff has made it possible for the number of inpatient admissions to almost double over the past three years, and during the past year the inpatient unit has had an 87 percent average occupancy. Furthermore, the relative number of more acute problems has increased, made possible by a larger and more available neurological house staff, and more effective nursing coverage. Recently our inpatient division on Bader 4 was remodelled to improve its effectiveness as a modern hospital unit. Although a number of useful and important changes were made, such as better facilities for nurses, parent interviews, sound control, etc., the most significant change was the addition of wall outlets for oxygen and suction. In the past, most of the acute and seriously ill neurological patients were managed in other sections of the hospital, but now it is possible for us to accept full responsibility for their care on Division 39. We also continue to fulfill our more traditional function of offering diagnostic evaluation of complex developmental problems such as mental retardation, disorders of communication, etc. The working team of neurologist, psychiatrist (Dr. Chester D'Autremont), psychologist (Dr. Amelia Blackwell), social worker (Miss Ann Murphy), and nursery coordinator (Mrs. Helen Edmonds) meets regularly each week to compare notes and reach diagnostic and management conclusions with regard to appropriate patients. It is our hope that a number of these children, who now are hospitalized because the problems are so complex that evaluation in the usual outpatient setting is impossible, will be better managed in the new Developmental Evaluation Clinic for Mental Retardation which will be part of the new outpatient building.

Neurology continued to remain in heavy demand for consultations throughout the patient divisions (453 in 1965) and outpatient department (833 in 1965), and the neurological clinics, including seizure

clinics, had 3000 patient visits in 1965. The new outpatient building will greatly enhance the effectiveness of our overall ambulatory care program. Much of the neurology of children consists of the long-term outpatient management of complex problems of mental retardation (our largest problem), seizures and motor defects. The new facility will provide an elegant opportunity for multidisciplinary evaluation in a setting where nursery and classroom observations are possible. The environment will be more suitable for pertinent observations than a busy medically oriented OPD, or an inpatient service. The larger OPD facilities will also allow us to accept new neurological patients to the ambulatory clinic on direct referral for consultation from pediatricians in the community, a desire which has been expressed to me by a number of physicians in the New England area.

Personnel Changes

Although somewhat inappropriate under a section dealing with personnel changes, I should like to begin by expressing my pleasure and gratitude that Dr. Randolph Byers' full-time contributions to all aspects of the activities of the department have *not* changed. Relieved of administrative distractions by "retirement", his impact on all of us as a senior consultant and teacher is probably greater than ever.

Dr. Gordon Watters joined the neurological staff in 1965. He is an old friend from the University of Chicago where he was trained in neurology, with previous training in pediatrics and pediatric pathology at Cincinnati Children's Hospital. He was persuaded to leave the University of Manitoba where he was in charge of pediatric neurology at the Children's Hospital. His interests range widely in the field of child neurology, and he is a valuable addition to our department.

Dr. Robert W. P. Cutler came to the laboratory as a research fellow in July 1964, after training in clinical neurology at the U. of Chicago. He was appointed to the active staff of the hospital in July, 1966. In addition to his contribution to the clinical teaching, he and Dr. Lorenzo (Ph.D. in pharmacology) are the mainstays of the research program of the experimental laboratory.

Division of Clinical Neurophysiology and Seizure Unit

Dr. Cesare Lombroso supervises a continually expanding undertaking which centers about the two closely interrelated activities of care of patients with convulsive disorders and the clinical neurophysiology laboratory. In addition to routine and special electroencephalography (4240 recordings in 1965), the laboratory now offers "sonar brain scan" or "echo" encephalography on a routine basis. The "sonar scan" was an investigative procedure at the time of the last annual report, but is now in common use in this hos-

pital. It offers an entirely innocuous addition to our survey methods of diagnostic investigation for such problems as brain tumor and hydrocephalus, and can be particularly helpful in suggesting whether certain instances of unilateral brain disease are due to atrophy or a mass lesion.

The management of patients with seizures is one of the major neurological problems of childhood. Seizures are often combined with other symptoms of neurological disease such as mental subnormality, behavior disorders of certain varieties, etc., and a number of patients present special problems of management which extend beyond diagnostic evaluation and medical or surgical therapy. The seizure unit has long recognized this fact and works closely with psychologists and social workers who are closely identified with the unit.

The training activities of the seizure unit are extensive and include a program for electroencephalography technicians, a post-doctoral fellowship program of one to two years for physicians, and a program of rotation for neurological residents.

Neurological Training Program

At the time of the report of 1964, our three year Children's-Brigham training program in neurology had just been awarded three year approval by the American Board of Neurology and Psychiatry, accompanied by expanded financial support from the National Institute of Neurological Diseases and Blindness. The first trainees had just begun their work. At any given time since, we have had seven residents, and beginning July, 1967, we shall expand to nine residents, three in each year. The objective of our postgraduate program is to provide a base of training for an academic career in neurology. There is a critical shortage of trained neurologists in this country and abroad, particularly those who are familiar with the neurological disorders of childhood. Furthermore, there is a fundamental need to supply teachers and investigators in this field.

Although a number of our recent trainees are either in the Army or still in the resident or Fellowship stage of their development, in the period since July 1963-64 academic year, we have participated in the training of three assistant professors and one associate professor who are now at other medical schools. I am also delighted that eleven of our residents have been engaged in some variety of investigative project during their residency program, and three of these projects were presented before local or national neurological meetings in 1965-66.

The close teaching relationship with the Peter Bent Brigham neurological service, which is the principal responsibility of Dr. H. R. Tyler, has been most effective and mutually beneficial. We anticipate an equally effective relationship with the Beth Israel Hospital beginning July, 1967, when residents from our program will be assigned to the neurological service there

under the supervision of Dr. Chaim Mayman.

The regular assignment of Harvard Medical students for a three week clerkship with us in their Principal Clinical Year, which began under the new curriculum, as well as our senior electives and responsibilities for neurological teaching in the Introduction to the Clinics Course, have given our service a greater contact with the undergraduate student body. We are most pleased to have the opportunity to acquaint these young men with the neurological problems of children, and hope to attract some of them to this field.

Research

The research interests of various members of the department range widely over the field of neurologic investigation. The primary laboratory facility of the department has been in the Children's Cancer Research Foundation Building, but is being moved to remodeled quarters in the House of the Good Samaritan.

Drs. R. W. P. Cutler and Antonio Lorenzo devote their major attention to the research program, with participation by residents, Fellows and students. The central theme of these investigations relates to regional studies of brain permeability in response to pathologic stress such as convulsions, anoxia and disease states in both immature and adult systems. The laboratory is fully equipped to utilize radioisotope methodologies, as well as pharmacology and physiology and histology in the study of experimental disease. We have received continuing research and Fellowship support from the National Institutes of Health, The Epilepsy Foundation, The Harrington Trust, The Personal Service Manufacturing Company of Chicago, The Cerebral Palsy Research and Educational Foundation (Clinical Fellowship). In addition, Dr. Cutler has received a recent grant from the National Multiple Sclerosis Society.

Areas of Research

The laboratory has emphasized three general areas. (1) Regional changes in permeability in reversible pathophysiological situations such as convulsions induced by pharmacologic agents: for example, metrazol, strychnine, methionine sulfoxamine, deoxyypyridoxine and LSD. These changes are correlated with EEG and systemic and regional brain changes in capillary surface, blood flow, and several physiological parameters such as $p\text{CO}_2$ and $p\text{O}_2$. The results of these studies are provocative and probably provide a method of determining the regional site of action of certain drugs, and hopefully will give us some insight into the reasons for the permeability change we see.

(2) We are continuing our examination of protein entry and turnover in brain in various experimental disorders in the laboratory. We have also studied albumin turnover in spinal fluid in a number

of human disorders including degenerations, tumors and mental retardation.

(3) The relationship of cerebrospinal fluid and brain tissue water in adult and immature animals. In the past two years, members of our laboratory group have presented papers before the American Neurological Association, the American Association of Neuropathologists, the American Society of Pharmacology and Experimental Therapeutics, and the Boston Society for Neurology and Psychiatry. We were invited to present a summary of this work before an International Symposium on the Blood-Brain Barrier in Amsterdam in 1966.

Dr. Lombroso has been responsible for a number of clinical studies relating to seizure problems and the diagnostic and prognostic value of the EEG. Certain of these studies have been presented before the electroencephalographic society, and a study of neonatal seizures was presented before the International Congress of Pediatrics in Tokyo. He and his colleagues have recently reported on the use of Valium as an effective method of interrupting status epilepticus, and have studied the use of pentothal EEG activation as an in vivo measure of responsive brain tissue. They have also used the pentothal activation method to assist in a precise definition of the site of epileptic discharge prior to surgery.

A research laboratory of clinical neurophysiology has been developed on the third floor of the House of the Good Samaritan. It has been equipped for the computer study of averaged EEG response to stimuli of various kinds evoked in the human subject. Exploratory studies are well along in the study of light sensitive epilepsy, and in the analysis of various structural defects of brain and special sensory systems. A mobile unit has now been assembled and will be used to study the responses of the newborn infant in collaboration with Dr. Peter Wolff of the Department of Psychiatry.

Dr. Gordon Watters has had a continuing interest in a wide variety of neurological subjects. He is currently preparing a publication on infantile myotonic dystrophy, and will be the coordinator of a more extensive collaborative study on muscle disease in association with a number of investigators from Neurology and other departments. He also spends a portion of his time in laboratory research, concentrating on the permeability changes in deoxyripyridoxine convulsions.

Dr. Byers maintains his longstanding interest in lead poisoning and has investigated the value of penicillamine in the treatment of this potentially brain damaging intoxication. He is also recording his observations on several clinical subjects, such as Huntington's Chorea in children and metachromatic leucodystrophy.

Plans for the Future

It has been a source of considerable personal satisfaction to see the Department of Neurology de-

velop so well during the three brief years that I have had the privilege of working at CHMC. Our next major developmental responsibility will be concentrated on improving our ambulatory patient service, made possible when we occupy the new outpatient facilities later this year. In addition, I am excited about the opportunities provided by the Developmental Evaluation Center which will be located on the upper levels of this building. This facility will provide an unparalleled opportunity for multidisciplinary training in the evaluation of the intellectually handicapped child. Mental retardation is the most prominent problem that faces pediatric neurology in point of numbers of affected individuals. We are also faced by the fact that the majority of the neurologic insults to brain in the fetus, as well as in infants and children, are potentially brain damaging and may lead to disorder of mentation.

The other major enterprise of the immediate future will relate to our research program on mental retardation. In January 1966, CHMC was awarded a grant of \$2.3 million by the National Institutes of Health to assist in the construction of a Mental Retardation Research Facility. This is a multidisciplinary research program which includes programs in Genetics and Metabolic Disease, Neuroscience, and Behavioral Science, all converging on clinical studies of the patient. It will heavily involve several departments of CHMC as well as basic science appointments which will relate to appropriate departments at Harvard Medical School. The Department of Neurology will participate in a major fashion in the Neuroscience research program. In addition, I have had the responsibility and privilege of serving as program director for this institution-wide effort. Construction of this research facility will begin this year.

Residents

Dr. John Allen	1964-66
Asst. Professor of Pediatrics and Neurology, Univ. of Southern California, Los Angeles	
Dr. Ruthmary Deuel	1964-66
Special Fellow, NIH (Lab. of Exp. Psych. NIMH)	
Dr. Donald Fishman	1964-66
Resident, Neurology, Western Reserve	
Dr. Rebecca Hanson	1965-present
CHMC	
Dr. John Hammerstad	1965-present (1968)
Dr. William Olson	1965-present (1967)
Dr. Frank Duffy	1966-present (1969)
Dr. Generoso Gascon	1965-present (1968)
Dr. Israel Abroms	1966-present (1969)
Dr. Anibal Garcia	1965-present (1968)
Seizure Unit Fellows	
Dr. J. I. Manson	1966-67
Dr. J. Martinus	1965-Oct. 1966
Dr. K-P. Herberg	3/66-present
Dr. D. Basu	1964-65
Dr. T. Yogo	1966-67

DEPARTMENT OF NEUROSURGERY

Donald D. Matson, M.D., *Neurosurgeon-in-Chief*

These two years have shown a continued increase in volume as well as a diversification of the activities of the Neurosurgical Service. We continue to draw patients from all points of the United States as well as from Central and South America and occasionally from Europe and Asia. The percentage of our patients referred from other centers and other surgeons because of particularly complex problems seems to increase continually.

During this two-year period, the active attending staff of the neurosurgical department has remained the same, with Dr. Matson, Dr. Shillito, Dr. Galicich and Dr. Rockett all being full-time neurosurgeons to the combined programs at The Children's Hospital Medical Center and the Peter Bent Brigham Hospital. However, in June, 1966, Dr. Rockett, who had previously established an office outside of the hospital, moved entirely into the practice of neurosurgery in the Greater Boston community. He retains his appointment as Assistant Neurosurgeon and will be the first neurosurgeon to have courtesy privileges in this department from an outside office. It is hoped he will bring many patients to Children's from his contacts in the community and will participate in residency training as well as the various conferences, rounds, clinics, and teaching activities of the service. It is essential that we function as an active, available service to the needs of our community as well as a referral center for complex and unusual pediatric neurosurgical problems.

On July 1, 1966, Dr. Larry Page, after completion of his formal residency training, joined the staff as Assistant Neurosurgeon. A unique arrangement has been worked out with Beverly Hospital which should be of great value to all concerned. Dr. Franc Ingraham for many years was very active as neurosurgeon and as consultant at Beverly Hospital, and other members of our department have also had appointments there. After Dr. Ingraham's death it became increasingly difficult to cover adequately the many consultations and duties at Beverly. Presently, therefore, Dr. Page has established his home in the Beverly area and spends two days a week in office and hospital practice there, and the balance of the week in the department here. This type of arrangement between outstanding community hospitals without specialty services and house staffs, and referral hospitals such as Children's may well be a prototype for the future establishment of regional centers which seems to be ahead.

Dr. Franc D. Ingraham

It is a sad duty to report that Dr. Franc D. Ingraham, Neurosurgeon Emeritus, died on December 4, 1965. His passing came in his second year of formal retirement, though illness had necessitated numerous periods of inactivity and marked curtailment of his surgery and teaching in recent years. Dr. Ingraham was a pioneer in the field of pediatric neuro-

surgery, as he not only initiated the department in this hospital but was a leader in establishing the principles and methods which have guided this discipline throughout the world. His imagination, intelligence, generosity and ability to lead and inspire others to work with him, stimulated and influenced a host of colleagues and students, as well as patients and friends.

In 1929, Dr. Ingraham's preceptor, Harvey Cushing, turned over to him the rapidly expanding area of neurological surgery in children. At that time the problems peculiar to the developing nervous system which might be amenable to surgical therapy constituted a virtually unexplored field. Franc Ingraham accepted this challenge and devoted the remainder of his professional career to the development of pediatric neurological surgery. His achievements and his contributions were many, and they have proved lasting.

As neurosurgeon to the Children's Hospital he developed a unique department, soon widely known and respected not only in Boston and New England but throughout the United States and, indeed, the world. Such clinical entities as subdural hematoma during the first two years of life, subdural effusions complicating bacterial meningitis in infancy, premature closure of the cranial sutures, diastematomyelia, persistent dermal sinus tracts and other variations of congenital spina bifida, classification and treatment of hydrocephalus, and techniques for managing the special problems relating to long intracranial operations in young children, all received his early attention, and through his personal work and his stimulation of others, came to be standardized situations with generally accepted methods of surgical treatment.

A concept which he continually emphasized and brought to the attention of pediatricians, neurologists and neurosurgeons everywhere was the importance of growth as a modifying influence in the approach to surgery of the central nervous system. He stressed the significance of prophylactic surgical procedures carried out on relatively well children in order to arrest or improve a progressive disturbance of neurologic function, or to prevent subsequent untoward sequelae that might ensue. He was always sympathetic, yet convincing, to parents and referring pediatricians in pointing out that the results of preventive surgery of this type might be unimpressive at the time of execution or in the early post-operative period, but in the long run extremely rewarding to both patient and doctor. He could command complete confidence in patients and their relatives with awe-inspiring brevity. No effort or inconvenience was too great nor too trivial when he undertook to carry a patient through the many medical and non-medical complications which can so plague a difficult clinical problem.

Another principle in which Dr. Ingraham believed was that the entire work-up, pre- and post-operative care and follow-up supervision, as well as the technical exercise of a surgical operation on children with neurosurgical disorders, should be under the direction of the neurosurgeon himself. He felt that continuous care of these children under one authority was superior to division of responsibility among several and that the neurosurgeon's task did not begin and end at the operating room door.

The neurosurgical unit at the Children's Hospital, which Dr. Ingraham initiated and did so much to expand and develop, made possible the publication from this department in 1954 of "Neurosurgery in Infancy and Childhood", the first textbook devoted to this field. This monograph still is in authoritative use throughout the world. Although not an extensive writer on his own, he stimulated his associates and pupils in a most persuasive manner, and his criticisms and suggestions were not only helpful but almost uncannily perceptive. Many a colleague, not only in neurosurgery but other fields as well, found his way made easier by some unsolicited act or suggestion from this generous man.

He will long be sorely missed by the Service which he started and led for so many years.

Staff Activity

During this two-year period, Dr. Matson continued on the American Board of Neurological Surgery completing eight years of service in April, 1966. He served as Vice-Chairman and as Chairman of the Board during the last two years. He has continued his interest in improving residency training programs and individual post-graduate education in this specialty as Chairman of the Residency Review Committee and as a member of the committee which has pioneered in the development of in-training written examinations. He has presented this work to the 50th Anniversary Meeting of the National Board of Medical Examiners, the Citizen Committee for Review of Medical Education in the United States and the Canadian Conference on Post-Graduate Medical Education.

Dr. Matson is also an Editor of the *Journal of Neurosurgery*, a Director of the Harvey Cushing Society (American Association of Neurological Surgeons), and continues to serve as neurosurgical representative to the Special Medical Advisory Group to the Veterans Administration.

Many commitments for lectures and teaching continue in other clinics both at home and abroad.

During 1965-1966 an increasing amount of time has been devoted to the enormous task of revising the textbook "Neurosurgery in Infancy and Childhood", published in 1954. It is hoped that this task will be completed in 1967. Work is progressing also at a slow but accelerating pace on an Atlas of Neurosurgery with Miss Mildred Codding.

Dr. John Shillito continues to carry a major share of the clinical and teaching load of the department. He has been promoted to Clinical Associate in Surgery at Harvard Medical School. He has been Editor-in-Chief of "Clinical Neurosurgery", the published proceedings of the Congress of Neurological Surgeons, and has been designated as the President-Elect of this national society of young neurosurgeons, a significant honor indeed. Dr. Shillito has continued a special interest in the study of patients of all ages with cerebro-vascular disease and has participated in the National Joint Study of Extra-Cranial Vascular Occlusion. He has participated with increasing frequency during the past two years in post-graduate teaching exercises at various hospitals throughout New England.

The Neurosurgical Research Laboratories in the Cargenie Building continue under the direction of Dr. Joseph Galicich. Dr. Galicich has also participated actively in the clinical and teaching activities of the Service. Dr. Ollie Heiskanen from Finland, and Dr. Karl Hovind from Norway have been full-time Research Fellows in the laboratory. Dr. Alan Rosenthal and Dr. Larry Page have spent shorter part-time periods in projects under Dr. Galicich's direction. Dr. Anthony Strong from Edinburgh served as a summer Fellow in the laboratory during 1966.

Research Activities

Studies of the relationship of adrenocortical steroids to water and electrolyte metabolism in the brain have been pursued. The action of these steroids on cerebrovascular permeability and the relief of cerebral edema associated with various experimental traumatic, inflammatory and neoplastic situations is of considerable theoretical and practical significance. A new model for the study of brain edema using an expanding lesion in the rat has been employed to study the effects of endogenous and exogenous glucocorticoids. These studies are being extended to include determination of effects of aldosterone and vasopressin. Another study has been concerned with the localization of receptors presumed to modify response to salt loading by spinal cord section at different levels.

Ultrasound B-scanning for the detection of intracranial mass lesions and determination of ventricular size and the location of the intracranial mid-line has been pursued with the Department of Neurology. One paper on this work has been published in the *Journal of Neurosurgery* and another is to appear in *Neurology*.

The possibility of using dilute silver nitrate solutions for sterilizing myelomeningoceles in babies as well as other exposed areas over the nervous system in a manner similar to that recommended for burns was explored. It was found that even dilute solutions caused irreparable damage to the caudal spinal cord and nerve roots of young rabbits, and would

appear to make this method entirely unsuitable for clinical use in the manner it is being tried elsewhere. This study is now in press.

A new method of cranioplasty utilizing acrylic coated stainless steel wire mesh was developed in the laboratory and has been successfully applied to approximately 15 patients.

Instrumentation has been designed and built for the stereotaxic treatment of movement disorders in young patients and the first patient in this clinic has been operated upon. It is anticipated that further application of this method will follow the availability of suitable candidates from other institutions. The principle of this procedure is the production of a thermal lesion (produced by radio-frequency current) accurately placed in the basal ganglion to interrupt the spontaneous passage of impulses producing involuntary movements and intractable spasm.

In connection with Dr. Cesare Lombroso, an increasing number of children with seizures, behavior disorders and varying degrees of motor and mental disability have been studied. This involves close cooperation in clinical and physiologic investigation, in electrocorticography during long complex operative procedures, and during an indefinite follow-up period. Extensive cortical resections in a number of carefully selected patients have proved very rewarding.

An increasing number of patients with neuroendocrine abnormalities, principally children with craniopharyngiomas, have been studied extensively with Dr. John Crigler and his group in the Clinical Research Center. The data being gathered on these patients during their immediate post-operative and follow-up periods is accumulating rapidly and is proving of great physiologic as well as practical significance. Particularly important are the advances which have been made in the acute and chronic management of these complex and critical patients referred here from many places toward the goal of establishing a reasonable plan of therapy to help others who see such patients less frequently.

During the fall of 1965 application was made to the National Institute of Neurological Diseases and Blindness of the National Institutes of Health for training grant support for the combined Neurosurgical Training Program of the Children's Hospital Medical Center and Peter Bent Brigham Hospital. This was approved in November, 1966, and funded in April of 1966 for a three-year period beginning July 1, 1966. This grant is intended to help support and expand the efforts of the Service in laboratory and clinical research and in education to prepare men for careers in academic neurosurgery with particular emphasis in pediatrics.

Teaching

Teaching activities of the Service have continued at all levels, with clinics to the first year Harvard

Medical students during their anatomy course and participation in the surgical part of the Introduction to the Clinic and the Principal Clinic Year. A student from the latter group is always assigned to the neurosurgical service. During the five elective months in the spring, one 4th year student joins our team each month.

Regular conferences within the Department are held in neuroradiology, neuropathology, electroencephalography, and medical neurology. We are most indebted to the heads of these divisions for their cordial cooperation and interest in our resident training program.

Over the period covered by this report, 12 new publications have come from this department and 8 more are in press. They are listed in the back of the Annual Report. These have been concerned with hydrocephalus, craniosynostosis, meningitis associated with congenital anomalies, intraspinal tumors, benign intracranial hypertension, ultrasound scanning, intracranial aneurysms in children, head injuries, achondroplasia with neurological complications, and intracranial tumors. This brings the bibliography of the Department of Neurosurgery to some 185 publications.

During this interval we have continued the policy of occasional acceptance of senior residents from other neurosurgical training programs in the United States for special training in pediatric neurosurgery. There are always requests from the directors of other university programs to do this type of exchange. Thus, we had two men in the academic year 1964-1965, each for six months as Chief Resident. Both these men had completed their formal training elsewhere and came for added experience. At this level, it is possible in a short time to give a trainee a great deal from our experience and also gain from them the profits of training in other centers.

The progression of career neurosurgical trainees in our own program has continued. An attempt is made to keep this progression somewhat flexible while at the same time being certain that each man fills the training requirements of the Specialty Board.

Before Dr. Franc Ingraham's death, there was interest expressed by some of his friends of establishing a fund for neurosurgery in his name. This has now been officially done and many friends and former patients and pupils have made generous contributions to it since Dr. Ingraham's death. With the permission of the major donors, a previous fund known as the Kent Fund has been incorporated so that there is now one official Franc D. Ingraham Fund invested with the Hospital. This fund is used for research and educational activities of the Department. Grateful acknowledgment is made again here to the many personal and professional friends of Dr. Ingraham who have remembered him in this way.

During the early months of the period covered by this report, the activities of the Department of Ophthalmology consisted largely of the consultation service provided by the members of the department, either at the bedside or in their private offices outside the hospital. Partly because of the lack of proper examining facilities within the hospital, and partly because of the inevitable difficulties of getting consultant and patient together in the same place at the same time, this service had shortcomings. The dedication and skill of the ophthalmologists assembled by Dr. Gundersen were unfairly taxed by the circumstances under which consultations were rendered. At the same time the hospital was not adequately fulfilling its obligation to the public in the important area of the care of children's eyes.

Patient Service

In the winter of 1965 representatives of The Children's Hospital and the Massachusetts Eye and Ear Infirmary discussed and eventually planned for a more complete, hospital-based eye service at Children's; and in June, 1965, Dr. Richard Robb came from the Eye and Ear Infirmary to join the Children's staff as an Associate in Ophthalmology with an office and examining facilities in the hospital. An outpatient clinic was re-activated and quickly became booked several months in advance. The clinic was made available to patients from other hospital departments, to children referred by outside pediatricians, and to families in the community at large. In order to keep pace with the steadily increasing volume of the clinic another Associate in Ophthalmology, Dr. Robert Petersen, was added to the staff in February, 1966, and provided office space in the hospital. His additional help allowed the number of clinic visits to be doubled, reaching the present level of approximately 40 visits per week.

During the same period, the ready availability of ophthalmologists within the hospital and the improvement in the instruments at their disposal—instrumentation being particularly important in this field of medicine—made it considerably easier to obtain ophthalmic consultations. As a result, the volume of consultations sought and answered jumped sixfold in the three-month period from June to September, 1965. The majority of these requests were from the departments of medicine and neurology, and as a group they provided an interesting array of ocular problems, including many eye manifestations of generalized pediatric illness.

Concurrently with the re-activation of the clinic and consultative services there was an increase in the number of admissions to the hospital for eye surgery. The hospital purchased for the first time necessary

delicate surgical instruments (previously eye surgeons had brought their own instruments), and eye operations were moved from the older Building A facilities to the main hospital operating rooms, where conditions were more ideal. Many of the admissions were for the surgical correction of strabismus (squint, or misalignment of the eyes), the most frequent ocular disorder of childhood. An interest in the early surgical correction of strabismus became part of a general effort to see and treat children with crossed eyes early in life to prevent the development of amblyopia ex anopsia, "the lazy eye", and to restore binocular vision in favorable cases. Other surgical procedures undertaken were the removal of congenital cataracts and the correction of congenital glaucoma. These are two conditions less often encountered in childhood than in adult life, but more challenging in children because of the greater difficulty of the surgery. Several children with blepharoptosis (drooping eyelid) were improved with cosmetic operations. Relatively little ocular trauma requiring surgery was seen, but it is anticipated that more will be encountered as the number of families who look to Children's Hospital for eye care increases.

Clinical Investigation

A start was made in several areas of clinical investigation in the field of pediatric ophthalmology. A study of cycloplegic refractions in children was begun. In cooperation with members of the neurology department an electrophysiological study of the activity of the visual cortex in patients with amblyopic or "lazy" eyes was begun. The publications of members of the department, listed in the back of the Annual Report, give an indication of other areas of interest which have been developed to the point of fruition. One publication of more than usual interest for pediatricians was the book edited by Dr. Sumner Liebman entitled "The Pediatrician's Ophthalmology." This collaborative effort of several authors provides a convenient, thorough, and reliable source of information about the ophthalmic problems most frequently encountered in pediatric practice.

The Department of Ophthalmology looks forward to coming months which will bring new clinical facilities in the outpatient clinic building now under construction. We also eagerly anticipate the help and stimulation of ophthalmic residents coming to the Children's Hospital in rotation from the Massachusetts Eye and Ear Infirmary. Finally we look forward to the completion of facilities for pathological and other laboratory investigation of basic eye problems. Our goal is ultimately to bring the Department of Ophthalmology up to the high standards of patient care, teaching, and research enjoyed by other departments of The Children's Hospital.

DEPARTMENT OF ORTHOPEDICS

William T. Green, M.D., *Orthopedic Surgeon-in-Chief*

The Orthopedic Department has been busy in all its areas of responsibility, particularly so in patient care, which is the first consideration in a hospital. For purposes of comparison, we have used figures for the fiscal years October 1964 through September 1965 and October 1965 through September 1966 although the scope of the report itself covers the period October 1964 through June 1966.

The inpatient census during these two years in the orthopedic division has been running at essentially full capacity—95.3 percent in the year October 1964 through September 1965, and 97.7 percent in 1965-66. The convalescent and rehabilitation unit in the Good Samaritan has run at a lower level of occupancy—86 percent in 1964-65 and 88.5 percent in this past year. The combined occupancy in the two units has been 93.3 percent in fiscal 1964-65 and 95.8 percent in 1965-66. Likewise the volume of surgery has increased in this two-year period. In the fiscal year 1964-65 there were 1,112 major operative procedures as compared with the previous year's figure of 959. In fiscal 1965-66 there was a further increase to 1,255 procedures. Another index of activity is the number of casts made in the inpatient plaster room, a total of 890 in 1965-66. This figure does not include outpatient casts nor those made in the convalescent area. This is comparable to the figure in 1964-65 when there were 876 recorded.

The average stay per patient was 11.8 days in 1964-65 and 10.6 days in 1965-66, whereas the average stay in the convalescent unit was 16.4 days in 1964-65 and 12.2 days in 1965-66. The total hospital days on our acute orthopedic wards was 19,818 in fiscal 1965 (October 1, 1964 to September 30, 1965) and 20,333 in 1966. Added to this were the figures of the orthopedic rehabilitation unit which were recorded as 4,711 in 1965 and 4,848 in 1966.

The uses of the Mary MacArthur Rehabilitation Unit continue to impress us as to its value. Essential to the proper functioning of our service is availability of beds for convalescence and rehabilitative care. Such a unit involves lower nursing requisites than those demanded in our active orthopedic areas, provides more economical care, and is a step between hospital and home care. It relieves the pressures on the acute hospital units, and in the proper framework is a stimulation to rehabilitation.

The orthopedic clinic has shown an increasing population during the past two years. In fiscal 1965 (October 1964 through September 1965) our orthopedic clinic visits were 13,802 which is approximately the same figure as the year before. In 1965-66 there were 14,964 visits which is an increase of 8.4 percent over 1965. The figures do not include certain "combined clinics" which involve multiple services, such as the cerebral palsy clinic and the hemophilia clinic in which our service is a major participant. In the cerebral palsy clinic the numbers increased from 1,536 in 1964-65 to 1,614 in 1965-66, an

increase of 5 percent. The hemophilia clinic was established this year and is a combined clinic involving hematology and orthopedic surgery. This is showing steady growth as is the arthritic clinic, which is a combined clinic of pediatrics and orthopedics.

The only loss of clinic population was in the poliomyelitis clinic which continues to show a steady decline in its numbers. We are, however, making full use of the resources of this clinic both in its physicians and physiotherapists who are skilled in rehabilitation in paralytic disease by treating increasing numbers of patients with other paralytic diseases. These include patients with muscle dystrophy and myelodysplasia. In myelodysplasia, for example, the paralysis and its related abnormalities present problems which are very similar to those encountered in the rehabilitation of patients with poliomyelitis. The newly-created orthopedic myelodysplasia clinic operates on Thursday mornings and, once a month, becomes a combined clinic in which urology and neurosurgery are represented, as well as orthopedic surgery.

Clinics involving multiple disciplines have many advantages in certain diseases, provided they are run efficiently and the disease is such as to require co-operative opinion and effort. If they lead to long drawn out conferences, they may become needlessly inefficient. Many of our combined clinics, such as cerebral palsy, are conducted as separate specialty clinics on particular days for orthopedics, on other days for the pediatric-neurology division, with a combined clinic once a month. With this plan, free referrals occur back and forth so that the objective of total care for the child is realized.

Research

Our research program is in a gradually expanding phase. The research training grant program has been of great assistance and has enabled us to place men in the laboratory early in their orthopedic program to become acquainted with the spirit and techniques of investigation. Already the effect of this is seen among our graduating residents who are showing more interest in academic medicine than before. There have been seven Fellows in the program during the two years, with four as the maximal number at any one time. In addition to their experience in the basic program, they are involved in various research projects, including: Fat embolism and its response to low molecular weight dextran and heparin; an animal study involving an experimentally produced lipemia in the experimental animal and its control (Dr. Lewis); a continuing study of tissue reactions to metals using tissue culture (Dr. Preston); tendon transplantation in the dog with evaluation of factor influencing tensile strength (Dr. Preston); studies of the endosteo-vascular supply of bone and the effect of medullary injury on fracture healing in the rabbit (Dr. Mital); the effect of re-fracture on

fracture healing in the experimental animal (Dr. Radin); the effects of quantified pressure on bone (Dr. O'Connell); study of the action of thyrocalcitonin on bone in rodents (Dr. Watts); thyrocalcitonin in diseased thyroid glands (Dr. Watts); thyrocalcitonin in thyroid in patient with parathyroid disease (Dr. Watts); the evaluation of ketosteroids of the urine in relation to predictions of relative maturity in the human (Dr. Burton).

Dr. Cohen continues his broad interests in the reactions of bone and in bone pathology. His immediate interest is the reaction of the body to foreign implants. Emphasis is placed on studying metals of various types both in their fundamental biologic reactions and as to the cause of failures of metal implants on the human body.

Dr. Pappas, along with Dr. Cohen, has worked consistently with the Fellows in their research projects, and certain Fellows have been related to Dr. Banks. Dr. Pappas continues his primary program in organ culture and has been interested in studying the factors inducing congenital anomalies in the chick. Likewise, he has been concerned, along with Mary (Arnold) Miller and Margaret Anderson, in the study of the hydroxyproline level in relation to skeletal growth and maturity.

Our Growth Study and the investigations of growth continue to be one of the major interests of the department. There are over 1,500 children in the active phases of growth who have growth abnormalities which are under serial observation. The life histories of various types of abnormalities are being accumulated along with the study of the factors inducing them. This unit is not only a productive research area but has an important function in a consultative relation to the care of patients and in correcting discrepancies in growth.

Dr. Henry Banks, whose laboratory area is in the Peter Bent Brigham Hospital, continues his study of fracture healing in joints and has increased the depth of his studies of the hip. He now has governmental approval for the use of tritiated thymidine in analyzing the performance of the bone prior to operative procedures on the hip. This is combined with the use of two other tools particularly helpful in evaluation; the use of tetracycline and tracer studies using calcium 47. The technique of cutting undecalcified bone has been particularly helpful. Dr. Watts and Dr. Oh have spent the major part of their fellowship affiliation with Dr. Banks. We are appreciative of the cooperation of Dr. Francis Moore in allocating space for the orthopedic laboratory at the Peter Bent Brigham Hospital and in aiding the total effort.

Dr. Trott continues his clinical investigation including the study of scoliosis in relation to changing respiratory function. Dr. Griffin has been concerned with various clinical investigations and, in particular, with joint diseases and scoliosis.

A major commitment of the department continues

to be the study of the evaluation of treatment in cerebral palsy, fostered by the American Academy for Cerebral Palsy. This study has its financial support from different agencies including United Cerebral Palsy and the Easter Seal Foundation. The Academy committee concerned with this research project, of which Dr. Green was the original chairman and remains a member, is now headed by Dr. Banks, the prime investigator in this study. It is interdepartmental study, and includes as active participants Dr. Panagakos, who is classified as a clinical fellow and whose primary activity is in this area; Elizabeth Zausmer, physical therapist, who has made great studies in developing standards of motor development; and Dr. William Berenberg. Also involved are consultants from other departments and divisions of the hospital, as well as Dr. Robert Reed, who is Professor of Biostatistics at the Harvard School of Public Health.

This study was stimulated by the confusion which exists in this field. There are various "schools" of therapy, arising in part from the nature of cerebral palsy and its many variations, from the fact that comparative assessments in this condition are most difficult to make, and because a natural improvement ordinarily occurs in most patients as they mature. As a consequence there is a large subjective element in the evaluation of results and there is dire need of a more critical appraisal of the whole field.

The first problem has been development of an objective record which is reproducible and in which the findings of multiple examiners have a high degree of correlation.

This has been done, the record has been tested on our patients, and appears to meet requirements. Two other clinics outside Boston are now using the record in recording evaluations of their own patients, and a team from our group visits these clinics from time to time, making a separate evaluation. This permits a comparative assessment. If the tests in these clinics confirm the objectiveness of the record and the feasibility of its general use, it is proposed to enroll multiple clinics which use different methods of therapy and to develop a major program for the study of cerebral palsy. The purpose is to develop a further knowledge of the natural history of various varieties of cerebral palsy, to study the value of early physical signs in prognostication, and finally to evaluate the effectiveness of various types of therapeutic measures. This is a large order, but if it can be accomplished, it will bring order out of a very mixed up situation.

Staff Activities

No one can criticize our staff for its lack of industry. It is accustomed to much responsibility and long hours. The increasing numbers of patients have made increasing demands on time as to the new teaching and clinic schedules. Though we have senior

residents of long training and excellent capability, our staff takes its duties seriously in supervising and assisting in surgical procedures, in conducting daily rounds and in frequent teaching assignments. Each one of our visiting staff serves as a doctor on the house services for two to three months each year, with responsibility for the house cases. Two individuals serve at a time in a senior and junior capacity. In addition, each man serves in the outpatient as scheduled, while many special clinics as well. Dr. Trott has the poliomyelitis clinic, Dr. Banks the cerebral palsy clinic, Dr. Griffin the arthritis clinic and the scoliosis clinic, and Dr. Manson the hemophilia clinic. For most of our staff this is a labor of love and devotion to the Children's Hospital, and their type of loyalty and pride in their work cannot be purchased.

The staff has been well represented on the national scene related to orthopedic surgery and in graduate education. Drs. Banks, Trott, and Cohen have been examiners for the American Board of Orthopedic Surgery, and Dr. Green is an Advisor to this Board. Drs. Banks, Griffin, Trott, Hugenberger, and Green gave Instructional Courses at the Annual Meetings of the American Academy of Orthopedic Surgery, and Dr. Banks gave Instructional Courses at the meeting of the American Academy for Cerebral Palsy. Drs. Banks, Trott, and Green have served on committees of the American Academy of Orthopedic Surgeons during these years.

In addition, the staff has presented several score papers at scientific meetings of a number of societies throughout the country, and has participated in a large number of programs. Dr. Green, during the period of this report, has been Visiting Professor at the University of Washington, the University of Pittsburgh, and McGill University Medical School. A further idea of the activities of the staff is reflected in the listing of their publications found at the end of this Annual Report.

Changes in the staff include Dr. John McGinty, who, after finishing his residency training here, spent four years in the military service and joined the staff on January 1, 1966. In addition to his appointment here, Dr. McGinty has major responsibilities at the West Roxbury Veterans Hospital, which is the Harvard unit and an area in which our Residents rotate.

Dr. Seymour Zimble, who finished his Chief Residency in July, 1964, joins the staff this summer after completion of his military assignments. He will be at the Beth Israel Hospital, as well as at CHMC.

In addition, Dr. Marvin Weinfeld, a former resident, was appointed to our Staff in July, 1965, and he, too, has an appointment at the Beth Israel. With the changed curriculum at the medical school, it is necessary for the hospitals affiliated with Harvard to be able to provide a greater breadth of instruction and experience than before. It is important, therefore, to have strong orthopedic representation at each

hospital.

Dr. Richard Eaton resigned his appointment here to accept an appointment at Cornell Medical School and as Director of the Hand Clinic at the Roosevelt Hospital.

Teaching

All students at the Harvard Medical School have their children's orthopedics at the Children's Hospital, and last year a section of patho-physiology of the musculoskeletal system was added to the second year curriculum in which our department participates. This was long overdue and was a recognition by the school of the great void that existed in patho-physiology until this section was added. The exercises were well received by the students of the current class and the fact that they were well received by the class of 1968 makes it doubly significant.

The major effort of our postgraduate instruction is in our residency training program. Our residents have a four year (and 3½ year) program to which candidates are eligible after completing at least two years of internship and residency after medical school, including one year of surgical training. In the clinical portion of the orthopedic program the first year is spent at Children's Hospital, the second year at Massachusetts General Hospital and the first six months of the third year back at Children's. During the last year of their program the residents are divided into two groups: one-half finish their preparation under the auspices of Children's Hospital and the other half under the aegis of Massachusetts General Hospital.

We have enrolled at Children's at any one time 14 residents in various stages of training. The Chief Resident is in his sixth year after medical school. In the rotation those individuals under our aegis for the latter part of the program spend three months at the Robert Breck Brigham Hospital and in their final year spend six months at the Peter Bent Brigham Hospital, which includes the position of Orthopedic Resident at that hospital. In their last six months our residents occupy one of two positions, namely that of Chief Resident at Children's or Resident at the West Roxbury Veterans Hospital.

The Future

As we consider the Children's Hospital Medical Center in relation to the future, certain things stand out in perspective.

1. The population in the United States is steadily expanding.
2. More and more people can afford quality medical care, either by their own resources or with government aid.
3. It appears that hospitals and clinics of various types will have a larger place in the delivery of medical care.
4. The evidence is that regional centers will occupy a greater position in the delivery of medi-

cal care.

5. Economic problems of the hospital should be greatly helped by the new programs of government aid in payment for medical care.
6. This is a renaissance period of research in medicine and in basic biology. A teaching hospital in pediatrics must excel in its contribution to the progress of pediatric medicine if it is to occupy its place in the sun.
7. With the increasing complexity of medicine and the expanding need for doctors, responsibility in medical education is forever on the increase.
8. The three responsibilities of a teaching hospital—patient care, research, and teaching—form an inseparable triad in contributing to the strength of a hospital, but the first responsibility of a hospital is patient care with clinical excellence.
9. It takes many attributes to make a hospital great and one cannot depreciate any of them; but, if other factors approach equality, the essential determinant is the strength of its medical staff.

If these assumptions have a reasonable degree of validity, it would appear that a prospective course of the hospital might be stated briefly in general terms. We should expand and improve our facilities as is appropriate to meet the increasing needs. We should provide a total environment which will attract and maintain a medical staff with attributes of leadership in all three of its cardinal responsibilities—patient care, teaching, and research. We must provide our community with superior medical care and, in addition, by our medical contributions and by a superior level of clinical medicine, enhance our position as a regional center and as an international consultative hospital for abnormalities of the child. The evidence is beginning to accumulate that if we do this, and are prepared to meet the increasing demands, the economic problems of the hospital would be alleviated in part by the new programs of governmental support.

Orthopedic Surgery is an expanding area in medicine. The needs of the Department must be considered not only in regard to its increasing clinical responsibilities but also the need for expansion in areas of research, including investigation of basic phenomena of the musculoskeletal system and its components. The staff needs to be expanded not only to meet its clinical and research responsibilities but for its teaching obligations as well. There is a great need for the training of academicians in orthopedic surgery and we must be prepared to provide the inspiration and the training. Such expansion must await our new facilities which are now either in construction or a late stage of planning.

The outpatient clinic building, which should be ready for occupancy this summer, will be a long-

needed replacement for the inadequate outpatient area in Building A, which has long been the home of our clinics. In this area is space for motor evaluation of retarded children and a conference room to enhance the organized teaching of medical students and residents in the clinic environment. All this is a major step in meeting our needs. Despite this additional space, there will be a continuing need for clinical facilities in the Bader 2 region as a home for our specialty clinics in which careful coordination of the clinic and intensive physical therapy is a fundamental feature. This includes the clinics for such crippling diseases as cerebral palsy, myelodysplasia, muscular dystrophy, and hemophilia, and a prosthetic clinic.

Laboratory: A primary need is an orthopedic research laboratory, which is to be provided as a musculoskeletal laboratory in the proposed Pediatric Sciences Building. This laboratory, which might be classified as a "basic research laboratory", will bring progress in basic biology of the musculoskeletal system in more direct relation to the problems of clinical medicine and their solution. Not only will this laboratory provide a locus of research which is so essential, it will be a great factor in attracting men of ability and accomplishment to the department which will help to enhance our strength in all areas of orthopedics. Such a laboratory is fundamental to the future of the Department.

Inpatient: Orthopedics has had the highest percentage of bed occupancy of any department during the last two years. In special areas such as ours, in which many of the conditions are complicated problems not associated with acute illness, cases are referred on a regional basis and even by national and international reference, and this should continue so. This has added to our duties as a community and consultative hospital. Furthermore, by the nature of orthopedic crippling conditions, hospital admission time averages longer than in many other types of patients. (In the last two years our average patient time in the hospital units was 11.2 days and in the rehabilitation unit 14 days.) We are short of beds now, but can expect an increase.

An expansion of between 24 and 32 beds will be made in the form of an "acute orthopedic unit" with a related rehabilitation convalescent area of about 16 beds. The additional beds will be on the fifth and sixth floors of the new Clinical Services Building, adjacent to the present orthopedic units. This will give rise to an efficiency that otherwise can not be attained. The orthopedic rehabilitation-convalescent unit will be in physical proximity to the new orthopedic division so that a sliding amount of nursing care, according to need, can be provided.

Other facilities for rehabilitation will include areas for testing of physical, mechanical, and mental attributes, and shop areas which will be used both in evaluation and in beginning rehabilitation. Connected

will be facilities for occupational therapy and physical therapy. These rehabilitation facilities will be available both to inpatients and to ambulatory patients from all services.

The clinical laboratory facilities necessary for continued growth and expansion in the field of orthopedics will require additional space. If we are to continue our international leadership in the field of skeletal growth, it will be necessary to have additional space for our Growth Study and transfer of this facility will be necessary. Other needed areas for clinical investigation include facilities for a clinical biomechanics laboratory, and a musculoskeletal physiology laboratory which would include a temperature and humidity control subdivision.

Certainly one cannot estimate needs accurately but we take some strength from the fact that the orthopedic service units in the Farley Building which we planned have been so satisfying in their arrangements that we would be hard pressed to make changes that would improve them.

Staff: The orthopedic staff needs to be expanded. It is our belief that it will soon require double the present number of full-time staff, with further expansion as dictated by need. In this expansion of the staff we must preserve and enhance the great tradition and strength in clinical orthopedics. We must develop specialists in various areas of orthopedics and have on our staff orthopedic surgeons who delve deeply into basic biology of the musculoskeletal system. As a part of our program "basic" scientists should be added to our staff. The proposed new laboratory facilities should be a strong influence in attracting new members to the staff with the particular attributes that are needed.

Medical Care: There is a great concern and apprehension by physicians regarding the possible changes which may ensue in the delivery of medical care. The physician is anxious to keep the practice of medicine the attractive profession that it has been in the past, with its feeling of independence, its individual challenges, its doctor-patient relationship, its inner satisfaction of aiding one's fellow man, and the feeling that he is, in part at least, a master of his own destiny. In any new arrangement of practice it is my belief that the physician should retain the fundamental principles and rights of the past, adapting them to the needs of the future. The practice of medicine and its methods of delivery should be the responsibility of the physician if we are to continue to attract superior individuals into the medical field and attain the quality of medicine to which we aspire.

As we foresee the future of the Orthopedic Department, it is our belief that the members of the staff should practice in a group arrangement, as an organized department, with all the responsibilities which such an arrangement would entail. The staff should be large enough to permit each individual to

have part-time activity in research and teaching. The staff must be of sufficient size to avoid overloading with clinical activities as it is at the present time. Time allocated to teaching and research should be inviolate. The Department by its combined clinical activities could go a long way toward providing its own support. The Orthopedic Department should be related to a similar organized pattern in the other departments, all in an appropriate total plan related to the Hospital and the Medical School. The department should be the essential unit of action and the heart of the plan.

Such a format would foster the independent spirit of the physician and would stimulate a feeling of decision and of responsibility in the members of the Staff which is so important to their accomplishments and morale.

House Staff—Orthopedic Department October 1964 - June 1966

Chief Resident	
Edgar B. Thompson, III	10/1/64-12/31/64
H. Mitchell Bell	1/1/65- 6/30/65
Robert C. Runyon	7/1/65-12/31/65
James Gordon Rich	1/1/66- 6/30/66
Resident	
Robert C. Runyon	7/1/64-12/31/64
Kirby L. C. VonKessler	7/1/64-12/31/64
Michael A. Ashworth	10/1/64- 3/31/65; 4/1/66-
Eric Radin	10/1/64- 3/31/65
James Gordon Rich	1/1/65- 6/30/65
Roderick Turner	1/1/65- 6/30/65
William Sullivan	4/1/65- 9/30/65
John E. Larkin, Jr.	4/1/65- 9/30/65
Joseph L. Shaw	7/1/65-12/31/65
Charles L. Renshaw	7/1/65-12/31/65
Henry S. Urbaniak, Jr.	10/1/65- 3/31/66
William H. Thomas	10/1/65- 3/31/66
Carl F. Brunjes	1/1/66- 6/30/66
David W. Grainger, Jr.	1/1/66- 6/30/66
Patrick Logue	1/1/66- 2/28/66
Richard McCollum	4/1/66-
Benjamin Bierbaum	4/1/66-
Assistant Resident	
Norton Lithwick	10/1/64- 9/30/65
Mohinder Mitul	10/1/64- 9/30/65
Patrick Logue	7/1/64-12/31/65
Joseph S. Barr, Jr.	1/1/65-12/31/65
E. William Schmitt	1/1/65-12/31/65
Allen Lewis	4/1/65- 3/31/66
Won H. Oh	4/1/65- 3/31/66
Edwin T. Preston	7/1/65- 6/30/66
William H. Simon	7/1/65- 6/30/66
Robert B. Keller	10/1/65-
Arthur L. Boland	10/1/65-
Eric T. Weber	1/1/66- 5/22/66
Francis O'Connell	1/1/66-
Frederick Ewald	4/1/66-
Lawrence Shields	4/1/66-

The activities of this clinical service have continued much as in the past with emphasis on increased utilization of our bed space on Division 14 and concomitantly of our two antiquated operating rooms adjacent to this Division. All told, in the past two years, some 3400 operative procedures have been carried out in these two rooms. All of the patients required general anesthesia lasting from 30 minutes to five hours or even more. The longer times were needed for middle ear reconstruction procedures in which the surgeon uses an operating microscope in order to see the structures in the operating field. Most of these procedures are necessarily time consuming since they must be carried out with the most meticulous care.

The type of ear operations done varied from ear drum repair to more extensive operations (Fig. 1), but these procedures accounted for only a very small part of our operating load. The remaining 3300 patients had a wide variety of problems ranging from diseased tonsils and adenoids to laryngeal tumors.

The vast majority of our patients have been, are now, and for the foreseeable future will continue to be, young children who are admitted for tonsillectomy and adenoidectomy. Virtually all of these children are referred to us by either a pediatrician or family doctor who has followed their health pattern for some time, or in the case of Staff patients, through the Medical Outpatient Department where they are carefully screened and then referred to the Ear, Nose and Throat Clinic for a final decision. Thus the popular idea that children's tonsils and adenoids are often removed for trivial reasons does not hold water so far as the present and past practices in this hospital are concerned.

Misconceptions concerning the need for this operation are widespread, not only among the laity but among some physicians as well. One of the classical, if dubious, means for a doctor to get newspaper headlines is for him to come up with a statement (usually at a press conference at a medical meeting, and usually undocumented) that "too many" of this, that, or the other kind of operation are being done. Not many months ago a distinguished Scandinavian medical visitor was quoted by Time magazine as saying that he doubted if tonsillectomy were ever indicated. Yet during the past twelve months or so three separate reports from authoritative sources have appeared in the American medical literature detailing the case histories of children with heart failure due to asphyxia caused by marked tonsil and adenoid enlargement!

We decide to do this operation on the basis of individual evaluation and need, as is the case with any other operative procedure. It is of more than passing interest to note that in this hospital in the past twenty years there have been no deaths associated with tonsillectomy-adenoidectomy. This is not because it is a "minor operation" (whatever that may

be) but because all concerned insist upon treating it as a major one.

Along with all the hospital family, we deeply appreciate the efforts of the Trustees and other devoted people who are working to improve the hospital. We look forward with keen interest to getting into our new Outpatient Building which will solve at least part of our pressing space problem. It now takes upwards of six weeks to get a hearing test done on a patient, a situation which obviously hamstrings our handling of children with hearing defects.

Dr. Allen Goodman's report on the Hearing and Speech Clinic follows:

Hearing and Speech Clinic

This unit of The Children's Hospital Medical Center has attempted to develop a department comprised of clinicians whose training and personal preference reflect those qualities of the researcher—skepticism, imagination, and compulsive thoroughness. Implicit in this effort has been the recognition that to have a valid understanding of disorders of communication, one must first be aware that these disorders are a complex function of anatomical, physiological, psychological, and social factors. Too, those in the field must understand that validity of actions in the clinic require clear two-way communication between clinician and researcher.

We have been able to attract a staff of this sort, have established a core of career people who promise to be stable, and around this group—and more of the same yet to arrive—are planning our next step towards eventual achievement of a clinical-research-teaching unit.

Ear Operations 1964-1966

MASTOIDECTOMY	
TYMPANOPLASTY	69
(Investigation of mastoid and middle ear with removal of diseased tissues and reconstruction of middle ear and ear drum)	
MYRINGOPLASTY	18
(Reconstruction of ear drum)	
MASTOIDECTOMY, SIMPLE	7
(Operation confined to removing diseased tissues from mastoid bone)	
CONGENITAL MALFORMATION—TYMPANOPLASTY	6
(Operation to create an ear canal, ear drum and conduction mechanism to improve hearing)	
TYMPANOTOMY	5
(Procedure done via the ear canal whereby the middle is opened and inspected for disease or anomaly)	
FACIAL NERVE DECOMPRESSION	3
(Opening of bony facial canal in the mastoid bone to relieve facial paralysis)	

DEPARTMENT OF PSYCHIATRY

George P. Gardner, M.D., *Psychiatrist-in-Chief*

The specialty of Child Psychiatry is a relatively young specialty, approximately one-third of a century younger in its parent field of Psychiatry than is Pediatrics as a specialty in its parent field of Internal Medicine or General Practice. It is well to note, too, that it is only in the past two decades that there has been a really effective rapprochement between child psychiatry and pediatrics. Nevertheless, in spite of these two items of youthfulness, it would be difficult to challenge the claim that through the cooperative efforts of all of the Chiefs of The Children's Hospital Medical Center (the Hospital proper, the Judge Baker, plus their adult psychiatry affiliate and the Massachusetts Mental Health Center) there exists here, in the aggregate, one of the most comprehensive mental health centers for children in this country. One does not say this in boasting or pridefulness—but rather to indicate the background of multiple service, training and research interests and programs from which exciting predictions can sensibly emerge.

If it is true that expectations of possible advances are best based upon research programs being carried out by highly motivated investigators, it is also true that scientific advances specifically in the health field are equally best made by investigators working together at the peripheries of two or more scientific areas. New knowledge—and indeed new professional specializations and disciplines—emerge through the insightful detection and the meaningful resolution of the similarities and differences in two highly related adjacent bodies of knowledge. This peripheralization of scientific advances can be illustrated by such hyphenations as biochemistry, psychophysiology, psychopharmacology, and a host of other relatively new disciplines.

Looking now at the present-day child mental health research field with this model in mind, one can make conservative predictions of advances in the next decade; and in respect to almost all of them, they could be forthcoming from the Longwood Avenue-Fenwood Road area. In citing these areas, the value of the present-day multi-disciplinary approach in the health field will become markedly apparent.

Genetic Involvement

The first field is that of genetics. It has long been felt by many in the child health field that there was a genetic determination or at least a genetic establishment of vulnerability to our most serious psychiatric disability in childhood—the infantile psychoses—specifically autism and childhood schizophrenia. It is also held by many that the very subtle, but extremely important for mental health adjustment, variations in sexual identification possibly have their bases in certain genetic patterns. At The Children's

Hospital, at the moment, a trained child psychiatrist, Dr. Stanley Walzer, works in association with Drs. Park Gerald and Louis Diamond on problems that have more than an indirect relevance to these two problems. Needless to say, demonstration of facts relative thereto will open up the whole area of possibly altering these disabling developmental sequences or controlling their emergence through sound genetic counseling.

While discussing this area of the schizophrenias, there are two more items to comment upon. The first is that there are in this country at the present time four outstanding laboratories in which the investigators feel that they have isolated a blood factor—a blood globulin—in the blood of schizophrenics that differentiates these patients from normal nonpsychotic controls. As yet there is no agreement as to the structure of this factor, nor as yet has the work of any of the four groups been replicated by others. Even with due regard and respect for the long years of repeated disappointments of research results in this field, it does not seem mere wishful thinking to predict that within the next decade the basic problems relative to the etiology of the adult types of schizophrenia will be solved.

Unfortunately, in respect to the schizophrenias of infancy and childhood, in which we are vitally interested, the differentiating blood factors noted by the investigators above are not present in the blood of autistic children. Yet this very difference may be of great heuristic importance and lead to hypotheses of value leading to eventual solutions in respect to both the childhood and adult types of the psychosis.

Schizophrenic Patterns

Research relative to other items, including that of the effect of the *experiential* factors of importance in the emergence of the schizophrenic patterns of response, is in progress at The Children's Hospital Medical Center. Although it is far from being demonstrated conclusively that the *condition* the "Autistic Child" can be induced by experiential factors, it is a fact observed by all pediatricians and child psychiatrists that crucial disabling "autisms" are creatable by extreme emotional deprivation and marked isolation of the child in infancy, or, for example, through sensory input deprivation in blind or deaf children. Drs. David Ricks and Gene Nameche, and their collaborators, working at the Judge Baker for the past five years, have found (and located as adults) from the 18,000 case records in the Center's files more than 200 children who seen in early childhood and who later did receive a definite diagnosis of schizophrenia in adolescence or adulthood and were hospitalized. As a result of the insistence of the former director of the Judge Baker, Dr. William Healy, the case histories of these later adult patients, taken

when they were children, are unusually complete and inclusive. These histories and examinations, together with the later hospital histories and actual follow-up interviews with these patients (and their relatives) 15 or 20 years later, should give us greater and more accurate insights to the experiential factors—and particularly child-rearing practices of the parents—than ever we had before. The longitudinal accounts of the traumata, the crises, the successes and failures at varying critical periods or stages of development in childhood, and their effects in a statistically significant number of cases of later schizophrenics, could lead to very important suggestions. These would relate to care and possible prevention, or drastic modification, of behavioral deviances and developmental arrests in the children of the future whom we will *know* to be (or can sensibly *assume* to be) vulnerable to that urge to the incapacitating withdrawal from reality that is the hallmark of the disease.

Development of Baselines

Our research in child development, and the allowable predictions that can be based thereon, are not confined solely to developmental and follow-up studies in respect to the schizophrenias and other serious behavioral deviances. For although the milestones in physical growth and development are easier to assess, and hence have been fairly well worked out in reference to specific chronological age levels, our developmental data in respect to the parameters of emotional responses and personality development have not. Through the ongoing researches of Dr. Peter Wolff relative to affective development in infancy, and of Drs. Rickard and Cohen in the later childhood years, we will have adequate baselines. These will be the developmental points and sequences, and will be far more accurate than those with which we have had to work in clinical diagnosis, in prognosis of later development, and in the elaboration of salutary milieu, remedial and rehabilitative contents, and schedules in treatment. We will be able to locate with much more certainty, timewise, those critical developmental periods which must be seized upon and fertilized by social, cultural, and informational feedbacks in infancy and at the preschool age. Otherwise, the later developmental stages and tasks will be all the more difficult—or even impossible—of successful solution. Our present-day milestones in the complexities involved in the personality development of the child are relatively hazy and sophisticated best-guesses and hunches; they will be replaced by accurate scales and measures of emotional maturity.

In addition, the child psychiatrist and his colleagues in the disciplines of clinical child psychology, neuropsychology, and educational psychology will no longer confine his attention to the affective, personality development of the child. He will concern

himself increasingly with the effect of these upon the cognitive aspects of development, with precision learning, and the learning disabilities. In addition, he will give attention to the all-important parameter of word usage sequences and the complex stages of growth in thinking which extend from the levels of primitive egocentric styles of mentation and communication to the attainment of proficiency in symbolic abstract and metaphorical thought.

Precision-learning Disability

There is no more widespread immaturation or developmental failure in otherwise completely normal or superior children in this country today than that of a precision-learning disability—a disability based upon the extremely complex childhood task of comprehending and successfully using those signifiers of reality known as words, letters and numbers. There are extant at the moment numerous well-defined theories relating to the occurrence of this phenomenon, and many different remedial approaches in use to overcome the resultant disability. None of the etiological notions can be documented and demonstrated in all cases, and none of the remedial approaches will prove efficacious in all cases. Needless to say, a much more precise and critically differentiating typology is of first importance in this area and it will be worked out with all its accruing diagnostic, prognostic and treatment benefits in the immediate years ahead.

It is to the solution of these problems that Dr. Bessie Sperry and her associated investigators have turned their attention in the psycho-educational laboratory comprised of the Upper and Lower Manville Schools at the Judge Baker. It is in this particular area that one notes a good example of the value of the collaboration of various disciplines with their own differing, but highly related, bodies of knowledge which have been cited above as necessary for the advance of knowledge in the child health area, regardless of the specific problem posited for solution. Attacking this particular problem of educational deficits are professionals acting as a team but trained in the differing disciplines of clinical child psychology, developmental psychology, child psychiatry, neuropsychology, education and linguistics. And in passing, it is interesting to note here the possible emergence of two new disciplines—that of “Clinical Educational Psychology” and that of “Clinical Linguistics.”

It can be added also that it is this group of investigators, challenged by the problem of educational retardation, who welcome most of all the clinical and research personnel about to be located in our new mental retardation units. The prediction of significant advances in our knowledge in both of these areas of disability is an expectation we have every right to entertain.

Drug Therapy

We have every right to expect, also, that great strides forward will be taken in the immediate future perforce of the joint efforts of investigators in the fields of child psychiatry, experimental and clinical psychology, and pharmacology. Investigators in Dr. Farber's laboratory and in laboratories of at least two Departments of the Harvard Medical School (Pharmacology and Psychiatry) give promise of additions in the form of efficacious drugs for the treatment of emotional disturbances in children. Thus far drug therapy, though of marked success in amelioration or arrest of some of these conditions in the adult, has not proved as helpful to us in the children's field. But with a demonstrable breakthrough in respect to personality deviances in adults, may we not predict with assurance marked advances in drug therapy applicable to the child who already demonstrates the Anlage—or those segmental deviant behaviors—that reasonably may be thought of as the probable harbingers of life pattern disasters to ensue? It is quite certain that such drugs of proven positive effects will soon be available to us.

Finally, it is the collaborative efforts of psychiatry and the social sciences—notably sociology—that have inspired and forwarded two very important developments in the field of mental health that should go far to strengthen and implement our future research and treatment efforts in the child mental health field. The first item relates to possible primary and secondary preventive measures to be taken, and the second refers to the adequate delivery of mental health services to those people who need them most but who are unsophisticated or reluctant to the degree that they cannot (or do not) avail themselves of the help we have to offer them and their children.

Preventive Psychiatry

In regard to prevention, a growing emphasis is now placed upon the ill effects of negative or harmful social and economic factors upon the mental and emotional development of children, and hence upon their adjustment both in infancy and childhood and in later adulthood. The deleterious effects of poverty, of cultural and informational deprivation, the lacks in achievement motivations based thereon, and the existent social and economic inequities that make it impossible to take advantage of opportunities for ensuring sound mental health development—all of these items are the research concerns of staff members of The Children's Hospital Medical Center, notably in the studies of Drs. Richard Galdston and Dexter Bullard, those of Dr. Sperry's group mentioned above, and the South End Service and Training Group working under the direction of Dr. Richard Brodie. All of these studies aim at early detection and amelioration of what seem to be possible causes of maladjustment as they exist in certain dis-

advantaged groups in our society; and early intervention with prevention is the hoped-for goal.

Largely due to sociologically based researches and influences, there is a definite emphasis upon the family, rather than the single individual child, as the sensible treatment unit-as-a-whole toward which we should direct our psychotherapeutic endeavors. Family unit interviewing for diagnosis, for evaluation, and for therapy is now in use, and evaluations of the results are under study. It would seem, on the basis of our initial application of this type of therapy, that it is useful, and particularly it is informative in the diagnosis of child problems that seem to stem from marked faults, lacks, or distortions in intra-familial communication. That this "family approach" will completely replace the individual treatment of children, which is the hope of some of its most enthusiastic supporters, is a suggestion probably without justification. But we believe our evaluations of this method will indicate the effective utilization of it and the necessary balance between its use and the use of intensive individual psychotherapy in those cases illustrative of discrete, well-initiated and classifiable childhood neuroses and disabilities.

Finally, our studies at the periphery of the mental health disciplines and sociology have indicated that the delivery of mental health services must be altered to the degree that such services will be brought into the community where they are most needed. This is basically the essence of the new movements resulting in the establishment of "Comprehensive Community Mental Health Centers." All sections of the psychiatric and allied mental health service personnel of The Children's Hospital Medical Center subscribe to these newer emphases, and presumably will play their part in the "satellite clinics" and "catchment areas" established as purveyors of these services into the outside community. All of these efforts will, we are sure, better the mental health of the children in our outside community areas of choice.

We of necessity, however, remind ourselves that the "community" of the Children's Hospital itself—and specifically all the medical and surgical services that comprise it—is in large part always to be our "community"; a community, incidentally, that even now calls upon us for mental health consultative, diagnostic and treatment service that we just cannot—with our professional personnel resources—deliver to the extent and to the degree that we ourselves would consider to be adequate and sufficient coverage. From existing requests from our medical and surgical colleagues arises the structure known as the "waiting list", a structure that by its length and its comprised unmet-needs weighs heavily upon our Department's collective conscience. However, with the expected help in respect to the financial burdens borne now by the Hospital, we predict an amelioration of those conditions that now frustrate our

hoped-for adequate mental health service to children throughout The Children's Hospital Medical Center.

Operating Programs

It is toward a comprehensiveness of child psychiatric service to this "community of sick children" that we have been striving at The Children's Hospital Medical Center for over a decade. Its comprehensiveness is attested to by an overview of the multiple programs that are in operation day after day:

I. Intensive psychiatric treatment to emotionally disturbed children and their families is carried out in our Central Treatment Unit. There are approximately 200 children in treatment in this unit at all times but there is always a waiting list of children needing treatment. These children, it is to be remembered, are children of our "Hospital Community", referred in the main from the hospital's outpatient, inpatient and specialty clinics.

II. Psychiatric treatment on the inpatient services of the hospital is effected through the assignment of child psychiatrists from the Department to each of the inpatient services. Though these assignments are made primarily for consultation and diagnosis, the demands for psychiatric treatment of these children while in the hospital increases each year. The usual procedure is to initiate the treatment program within the ward setting and continue it later in the Central Treatment Unit. Plans are in progress at the moment for the establishment of a definitive "Outpatient Psychiatric Follow-up Clinic" to which these children will be referred following hospitalization.

III. Psychiatric consultation and diagnostic service is given to the Medical Outpatient Division, Family Health Service, Adolescents' Clinic, Maternal and Infant Health Study, The Children's Mission, and to the specialty clinics. Expansions of these services in the immediate future will be to the new Mental Retardation Center and to more of the specialty clinics, e.g. the Speech and Hearing Clinic and the Adolescents' Cardiac Division.

IV. To overcome the very serious manpower shortage in the field of child mental health both within the hospital and beyond, the staff of the Psychiatry Department conduct formal accredited training programs in Career Child Psychiatry, Pediatric Psychiatry, Child Clinical Psychology, and Psychiatric Social Work.

In addition to these training programs the Department offers required and elective courses in child mental health and development to pediatric residents, medical students from Harvard Medical School and elsewhere, pre- and post-doctoral students in clinical psychology, social workers other than those in the psychiatric social work sequence, nurses, recreation workers, and physiotherapists. And, finally, all staff members of the Department of Psychiatry have faculty appointments in university departments and all staff members are involved in didactic teaching, seminar instruction or student supervision.

It is through these multiple and varied programs of Service, Training, Education and Research that the Department of Psychiatry does its best to meet the child mental health needs in its "community"—The Children's Hospital Medical Center—and secondarily but meaningfully extends them to the larger community beyond the hospital. The increasing comprehensiveness of these programs is their greatest asset, and the goal set by us is that in the immediate future a child suffering from any of the emotional and behavioral disabilities of childhood will get complete evaluation and complete and adequate care at The Children's Hospital Medical Center. Probably only then will we see the realization of those predictions outlined above in respect to child mental health care.

1965-1966 Statistics
OUTPATIENT

Treatment Visits (parents included) . . .	9608
Diagnostic Psychiatric Visits	
MOPD	943
Seizure Unit	9
Adolescents' Unit	101
Psychological Evaluation Visits	
MOPD	671
Adolescents' Unit	150
Patients in Treatment in Psychiatry Clinic	74
Outpatients of Private Physicians	120
Patients in Intensive Treatment in Department of Psychiatry	201

INPATIENT

Psychiatric Treatment Consultations	1012
Psychological Evaluation Visits	418
Number of Patients Referred to Psychiatry Clinic for the Above Services	1842

DEPARTMENT OF RADIOLOGY

Edward D. B. Neuhauser, M.D., *Radiologist-in-Chief*

In 1956, when the Department of Radiology moved from its long out-moded quarters on the fourth floor of the Longwood Avenue building to its then-splendid facilities on the second floor of the Farley building, statistical predictions suggested that an annual growth rate of 10 percent could be expected. The predictions have come true, for, in the past ten years, the department has experienced more than 100 percent growth, and our current statistics indicate an annual growth of approximately 12 percent. To cope with this increasing work load in our present facilities, we have had to increase our technical staff and lengthen our work week to 80 hours. The department is operating under extreme pressure during peak clinic hours, and the morale of no one, staff or patient is aided by long hours of "standing room only."

No additions have been made to the permanent staff of the department since Dr. N. Thorne Griscom joined us in 1963; however, Dr. Robert Wilkinson and Dr. Turgul Pirnar, Senior Fellows of the department, have carried out some staff functions in addition to their research duties. We are still finding some time for teaching, research, and other productive efforts, but the time devoted to these pursuits becomes less as our work load continues to increase at an almost overwhelming rate.

On the occasion of her marriage to Mr. Bruce Levison, Ann Miles, formerly Chief Radiographer, relinquished her duties and became Neuroradiographer to the department. Miss Cecilie Godderidge was promoted to the position of Chief, and under her aegis, quality has been maintained and improvements effected.

Unfortunately, the usual number of affiliating residents from the Peter Bent Brigham Hospital has not been available to us since January, 1966. We fortunately overcame the initial difficulties of filling the residency program and now have residents with at least three years of previous X-Ray training. In addition, we have a number of Fellows, all of whom have made an important contribution to the department.

In the area of nuclear medicine, Dr. Melvin Tefft has, with great enthusiasm, approached the use of radioisotopes in diagnostic procedures in infancy and childhood, and has clearly demonstrated the value of this procedure not only in diagnosis, but in the studies of the normal and abnormal physiology of the brain, lungs, liver, kidney, and other structures. Important research activities and papers have been produced for the department by this division.

Starting from scratch just a few years ago, with equipment inherited from one of the research divisions, Dr. Tefft is now meeting a demand for five radioisotope scans per day (each taking one hour) in addition to coping with increasing demands for radiotherapy.

The members of the diagnostic division have continued their usual travels for lectures and refresher courses, and have published a small number of significant papers.

I believe we can look forward to the next few years with confidence and with the hope that we will be able to expand our physical facilities and add to our permanent staff to better enable us to cope with the increasing work load and continue to contribute to better patient care.

List of Residents, Fellows and Volunteer Assistants

Department of Radiology

September, 1964 through June, 1966

Robert P. Andrews, M.D.	Sept. 1966-Nov. 1966
Naim Attallah, M.D.	June 1964-Dec. 1964
Frederick G. O. Burrows, M.D.	Sept. 1966-Dec. 1966
William J. R. Caldicott, M.B., B.S.	June 1966 to present
Ocelio A. Q. Cartaxo, M.D.	June 1966-Dec. 1966
John P. Clements, M.D.	June 1966-Dec. 1966
Setino Divan, M.D.	Jan. 1966-April 1966
Alvin Edelstein, M.D.	Apr. 1966-May 1966
Kenneth E. Fellows, Jr., M.D.	June 1966 to present
Robert Freele, M.D.	Oct. 1964-June 1965
Eliezer Friedman, M.D.	Nov. 1964
George G. Fuller, M.D.	Jan. 1966-June 1966
Jorge Ganson, M.D.	June 1966-Oct. 1966
Robert Hartley, M.D.	Oct. 1965
Herman Hernioci, M.D.	May 1965-June 1965
Erhard Hoffman, M.D.	June 1965
James L. Holm, M.D.	July 1965-Dec. 1965
Henry A. Hudson, M.D.	July 1966-August 1966
William Keen, M.D.	Nov. 1964-Dec. 1964
Roberta Kirch, M.D.	Feb. 1965-Mar. 1965
Jerald P. Kuhn, M.D.	July 1965-Dec. 1965
Thomas Lipscomb, M.D.	May 1966-July 1966
David Lund, M.D.	Jan. 1965-June 1965
Marshall Lustgarten, M.D.	Jan. 1966-June 1966
Walter McLean, M.D.	Jan. 1965
Don E. Mathiesen, M.D.	April 1965-July 1965
Howard J. Mindell, M.D.	July 1965-Dec. 1965
Kenneth H. Mueller, M.D.	April 1965
Lester Nichroz, M.D.	April 1966-May 1966
Laval Peloquin, M.D.	Nov. 1965-Dec. 1965
Ervin Phillips, M.D.	Jan. 1965-June 1965
Turgul Pirnar, M.D.	June 1964 to present
William W. Riggs, M.D.	July 1965-Dec. 1965
Martin Rocca, M.D.	Jan. 1965-June 1965
Dennis Sanidas, M.D.	Oct. 1964
C. Deem Schoenfeld, M.D.	June 1964-Dec. 1964
Roy D. Strand, M.D.	Jan. 1966 to present
Alfred E. Swett, M.D.	April 1966-June 1966
Howard Wax, M.D.	July 1965
Robert H. Wilkinson, M.D.	July 1965 to present

Department of Radiology Statistics

	Films	Diagnostic Cases	Treat-ments	Isotope Scans
1965-1966	135,774	43,292	5,016	537
1964-1965	122,535	39,845	3,971	319
1963-1964	111,559	36,548	2,908	
1962-1963	91,346	32,194	4,118	
1961-1962	86,339	30,237	3,049	
1960-1961	81,378	28,526	2,728	

The Surgical Service of The Children's Hospital Medical Center is an extremely active unit, constantly dealing with widely diversified problems in infancy and childhood. For many of the conditions we handle, therapy has long been well standardized and is essentially devoid of risk. Concurrent with these favorable cases (which fortunately constitute the major part of our work-load) we face many life and death struggles in management of serious and baffling problems which threaten the health or life of youngsters. While the first kind of case can be well handled by a proper staff in a rather routine fashion, in the second category are those which are our greatest challenge and which call for efforts in clinical research or in the surgical laboratory in the attempt to develop ways of solving some of these problems. Fortunately, over the years we have been able to bring forth a considerable number of new techniques, and have gained the satisfaction of making important contributions to surgical knowledge. This stimulation urges all of us onward to find suitable answers for some of the problems which still are unsolved.

As we look back and try to sum up a few of the things we have been doing, it is vitally important to take a brief view of the milieu in which our activities have been conducted. Several broad areas immediately come to mind: trustee responsibility, administrative control, other professional services, our nursing staff, the resident group, the research laboratory—to mention only the major ones, but at the same time recognizing valuable support from secretarial staffs, technicians, housekeeping department, and subsidiary groups, all of which combine to make ours a first-class medical institution.

To the trustees go our deep thanks for their wisdom and concentrated efforts in managing the overall financial problems of the hospital; laboring under a heavy debt, yet exhibiting marked vigor and vision in planning new developments for the future and mounting a major fund-raising campaign to make these dreams and aims practical and obtainable.

To the administration of the hospital we are greatly indebted for covering and management which is above and around the professional services. To double the size of a hospital in terms of bed capacity invites a manifold increase in the problems of managerial supervision. Our top structure of administration has necessarily been enlarged and branched to direct, control, and help in such a way as to give wonderful support for all of the clinical and laboratory services, to provide a well-coordinated solidarity for the institution as a whole. We are most fortunate in having Dr. Cronkhite at the helm. Few hospitals have had this expert, general directorship to handle their current problems and also direct their efforts for future expansion and improvement.

Nurses and Residents

To perform a technical maneuver at the operating table requires from one to several hours of the surgeon's time. But, to get a child well, on his feet, and out of the hospital requires protracted and expert work on the part of the nursing staff over subsequent days and nights. This goes on for an average hospital stay of a little more than a week, and in the more complicated cases extends over a much longer and more difficult period. It is impossible to overly praise the excellent work of our nursing staff, under the most able direction of Miss Muriel Vesey and her various assistants. Nowhere in all the fields of medical and surgical nursing is the labor of a nurse more vital than in the treatment of illnesses in childhood and infancy. Nowhere is this valuable assistance more manifest than on our Surgical Service, where, so many times, not only the comfort but the very life of a child depends upon the care given by a nurse.

In running an institution such as ours, a staff of interns, residents, and fellows constitutes a large central core of professional people which has a double purpose. These men are here for training and to absorb all they can of the facts and techniques related to study and treatment of human disease; they also perform an important role in the care of patients who fill our beds. It is fortunate that the institution has been able to attract and maintain a superb house staff over a long span of years. These 12 surgical men are of high quality and have played a most important role in the ability of the service to extend courteous, efficient, and life-saving steps to a very large number of children who are managed in both the Outpatient and Inpatient Departments. They are a picked lot, having attained high records in medical school; all of them have had considerable previous background in general surgery at other hospitals in the greater Boston area or in other cities around the country. Their alertness and fresh points of view have, on numerous occasions, made it possible for them to suggest changes in certain technical details of operative procedure or postoperative management which have been readily accepted and now form standard parts of our therapeutic regimes.

One cannot speak too highly of our sister services. Consultations and help from colleagues on the medical, cardiological, neurological, tumor therapy, and other services are instantly available at any time. They make it possible for us to provide not only the technical steps or surgery, but also the supporting attacks which are so often necessary in making a total and all-encompassing effort to treat the more complicated abnormalities and physical disturbances. Constantly, we are supported by the excellent work of those in the blood bank. Constantly, we call upon the roentgenological department for diagnostic steps and their revealing examinations. Anesthesia of an

expert sort is required when operating on a small or seriously-ill child, and this high order of skill has been constantly at our call.

Research Efforts

The Laboratory for Surgical Research is for us a workhouse in which to test our ideas, and to attempt finding the answer to some of the perplexing situations which we encounter in the clinic. Surgery of infancy and childhood has made enormous strides during the last three or four decades, but it is obvious that much yet needs to be done because a hospital such as ours becomes a collecting point for some youngsters who have extraordinary problems which simply cannot be handled in a general community hospital of this city or other area of the country. Therefore, we frequently find ourselves facing a child who has an unfathomable problem, the answer to which simply cannot be found in books or in the experience of doctors here or elsewhere.

To make some advance, it is necessary to turn to the laboratory and see what can be accomplished in the way of devising a new procedure or better surgical technique, which when developed, practiced, and mastered, can then be taken to the hospital to help human beings who initially provided us with the challenge. To search and research in the laboratory is often a long and fruitless hunt, leading to disappointment and complete failure. On the other hand, to dig in and hunt has often led the way to a ray of hope and, indeed, to dramatic success when new and bright therapeutic steps are developed. Nothing is more satisfying! Of course, all activities of investigation require extensive laboratory space and equipment, a devoted staff with zeal for searching, a broad supportive financial backing, and a sense of relevancy so that the laboratory is conscious of the clinical problems which must be attacked and solved. This is not "basic" research; it is better termed "applied" research. As we look back over the last decade it is with considerable pride that we can point to publications, numbering well over a hundred, which have been of real value to the advancement of children's surgery. Certainly, this effort has been a most worthy one, and has justified all of the time, effort, man-power, and money which

Surgical Advances

Great effort has gone into the development of methods for providing extracorporeal circulation. This, in short, means the building, operation, and control of a mechanical apparatus to take over from the body the total functions of oxygenating blood and circulating it around the body. With such apparatus the heart can be temporarily relieved of its vital duty and can be opened up for correction of some deformity which exists therein. Ten years ago such a technique was not available, but now we regard it as commonplace to thus support a patient

for periods up to two and one-half hours while some cardiac repair is being carried out. This can be done in a reproducible manner with little worry, and with virtually no risk to a patient, as far as circulation and oxygenation are concerned.

Obviously, there are definite risks in making the intracardiac repair, the outlook depending upon the type of abnormality which must be treated. Some of these, such as atrial septal defects, have mortality rates which are nearly zero, while the more complicated reconstructions for the tetralogy of Fallot involve risks which can get as high as eight or ten percent. Advancement in the state of this work can be judged by the fact that now over 1,400 extracorporeal perfusions have been carried out in our operating room (159 of them in 1966). The way has been opened to tackle reparative procedures for many intracardiac anomalies, which are fairly numerous in the general population. The extent of our case-load can be indicated by the fact that over 5,000 operations of various sorts have been performed in this hospital for correction or alleviation of congenital abnormalities of the heart and great vessels.

Great advance has been made in the closure of congenital openings between the two sides of a heart. In the early 1950's, means were found to close off an orifice between the two auricles. Such repair has now been well established, and is carried out with a risk that is negligible. Conversely, obliteration of holes between the two lower chambers (the ventricles) has presented more formidable obstacles. The nerve-conduction system of the heart usually runs along one corner of such an opening, and manipulations in this dangerous zone can be complicated by injury to the nerve, producing heart block which leads to fatality or serious impairment of cardiac action. Until a short time ago, surgical closure of ventricular septal defects, while occasionally gratifyingly successful, often was followed by disastrous block. In other instances there was a disturbing persistence of part of the shunt, it being technically difficult or impossible to get a complete closure. Focusing on these problems we have now been able to improve our techniques with the onlay of a patch of plastic material in such a way that the septal orifice can be well closed and the risks of block are very low.

Patients subjected to temporary support with a heart-lung machine (while carrying out a repair within the heart) were previously found in some instances to have serious intrathoracic bleeding following operation. It is a good example of interdepartmental cooperation to point out that studies by Dr. Sherwin Kevy and others from our blood bank have ferreted out the cause for the underlying hematological deficiency. By measurement, it is now known that there is a great increase in fibrinolysin circulating in the blood immediately after such an operation. Knowing this, we can now neutralize

such fibrinolysins by administration of epsilon-amino-caproic acid, which combats the deleterious fibrinolysin. Our problems of postoperative bleeding have now largely vanished.

Across the country, surgeons performing repairs of cardiac defects have been plagued frequently by postoperative development of a congested or so-called "pump lung", which can appear within 24 hours, and which can pose great problems in treatment. This can be a very serious complication, and is often fatal. Studies on this syndrome have convinced us that the postoperative pulmonary changes were almost certainly a sequela of damage, because there had been incomplete supply of blood to the lungs during the operative procedure. Utilizing this concept of etiology, the logical step in prevention of it would lie in the direction of providing more adequate circulation through the lungs during surgery. Adopting steps to go beyond what has been customarily used, and to provide a higher flow of blood to the lungs during a temporary cardiopulmonary by-pass, we have been able to preserve the vitality of lung structure, and have headed off the destructive process. The validity of the concept and the value of the preventive measures which have been adopted have brought us to a point where troubles with postoperative "pump lungs" are now almost non-existent.

Hyperbaric Oxygenation

As we look at the overall picture of surgery for cardiac defects in youngsters, one of the great areas where results in the past were poor involved those patients with various serious cardiac anomalies which are very crippling and require operation in the first year of life. Dr. Bernhard has focused on the possibility of acquiring benefits by performing such surgery under conditions of hyperbaric oxygenation, which can be accomplished by carrying out the surgery in a large steel chamber, the internal atmosphere of which is compressed to three or four times that of normal atmospheric pressure. This has the effect of forcing more oxygen into the body tissues and organs which require it for survival. Thus, a temporary and very impressive boost can be given for a half hour or an hour, during which time the baby is temporarily in a better state to withstand the reparative steps of surgery. Extensive studies conclusively indicated that performance of such surgery under hyperbaric conditions would be a distinct advantage for critically-ill babies. We, therefore, moved forward to build a modern hyperbaric chamber within the hospital grounds. The United States Public Health Service made a large grant to the hospital to build such a unit, which is now housed in the basement. This chamber has been in operation since the spring of 1966, with activities sponsored by The John A. Hartford Foundation of New York. More than 200 babies have been operated on under hyperbaric conditions. The results in these

have been better than reported from any other surgical service in this country, or indeed, the world.

For decades it has been known that one of the major complications of abdominal surgery is the possible development of intestinal adhesions. These lead to subsequent intestinal obstruction and, not infrequently, to death, even though there had been complete relief of the original disease for which operation had been undertaken. The younger the patient, the more apt we are to see this dreaded complication. Surgeons have long endeavored to find means to minimize the formation of adhesions, and some minor advances have been made in this direction, but on the whole, much was left to be desired. Dr. Replogle has answered the challenge, and with considerable vigor in the laboratory has investigated various lines to find methods for preventing development of adhesions. He has demonstrated that intra-abdominal operations give an inflammatory response by pouring out fibrin. Its subsequent organization into adhesive bands can be largely or totally obviated by the administration of large doses of phenegan and decadron during a three-day period. A long series of animal experimentation has shown the effectiveness of these drugs when given in high dosage. They can be used with safety when employed in dose ranges which have been established. On the basis of these findings we are now beginning to employ this technique in the hospital and it offers a bright hope in the elimination of one of the greatest hazards of intra-abdominal surgery.

"Artificial Heart"

Realizing that the greatest killer of human beings, in all ages, is the failure of the heart to function (from various causes), and believing that probably many individuals could be saved if only some mechanical apparatus could be provided to assist the heart, several groups around the country have been stimulated to attempt development of a so-called "artificial heart" to assist in the cardiac work for temporary periods. The idea that it might be possible for engineers and physicians to construct such a mechanism immediately poses scores of problems, such as provision of a power source to drive the pump, development of controls for maintaining appropriate speeds and pressures of pumping, preventing clotting of blood within the unit—and a host of other hurdles which must be surmounted and conquered. The obstacles are many and obviously high, but it does seem reasonable to expect that they can be overcome and I have no doubt that someday the goal will be reached. It is far off, but appears to be obtainable. Dr. Bernhard has thrown himself into this effort, and with very generous supports from the National Heart Institute, is conducting a broad and intensive program in the laboratory to study several of the problems which must be met and dealt with. This is obviously a long-term venture.

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